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CACTUS AND SUCCULENT JOURNAL

VOL. XXIX JAN.-FEB., 1957 No. 1

FIG. 1. Dr. Helia Bravo and Dr. Lyman Benson at a recent dinner in honor of Dr. Bravo from Mexico. Photo by Dr. George Lindsay

CACTUS AND SUCCULENT JOURNAL

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PRESIDENT'S MESSAGE

The current issues of the Journal include the beginning of a controversy, which is interesting insofar as it is concerned with a group of plants in need of investigation. It is to be hoped, however, that future publications may be directed solely toward presentation and analysis of facts. In the opinion of the writer, the pages of the Journal should be closed to publication of attacks upon individuals. These are not worthy of the Society or productive of useful results.

The basic difficulty is a misunderstanding of the objectives of plant taxonomy. This field is not concerned with the discovery of new species or other taxa as a primary purpose, though this is one form of contribution to knowledge. The more important object is understanding the interrelationships of natural populations of plants and formulation of a workable scheme of their classification. A genus or species is not the special property of the person who named it, and he is not honor-bound to defend it against all comers. Neither is an amendment to the status of a taxon necessarily correct. Anyone may publish an opinion concerning the classification of any group; each person is free to contribute his mite toward pooling of information which may lead ultimately to determining the truth. All are free to disagree on the significance or interpretation of the mass of information or any part of it.

Furthermore, anyone is free to change his opinion or judgment without loss of face. Those of us who describe and name new taxa (as for example new species) as a matter incidental to the organization of genera or other groups must reverse ourselves on occasion as new data come to light. For example, in 1942 the writer described and named *Ranunculus Collomae*, based upon collections from northern Arizona. In 1948 it was necessary to abandon this name in favor of *Ranunculus oreogenes* Greene (1901) based upon a relatively meager fruiting specimen from Colorado. Accumulation of a chain of evidence led the writer inescapably to this conclusion. Quite likely suppression of the data would have allowed *Ranunculus Collomae* to stand for as much as a century, but this is not the object of the game.

Who named a species is unimportant; so is the name of the author following it. This name is not included to honor the author but to facilitate reference by means of indices to the original description and the type specimen. Most of the injured pride and hurt feelings of those who have named supposed genera and species have arisen through failure to understand this point.

Dr. Helia Bravo H. of the University of Mexico has just visited Arizona, Baja California, and California for study of cacti in and near northwestern Mexico. It was our good fortune to have her visit in Claremont on Sunday, November 27, with the members of the Executive Board. Profesora Bravo was a charming guest. It was a pleasure for all of us to meet her.

LYMAN BENSON

PHILADELPHIA CACTUS SOCIETY

The officers of the Philadelphia Cactus and Succulent Society for the years 1956-1957-June 1958 are as follows:

President—Mr. John Johnson
1004 S. Broom St., Wilmington, Del.
Vice-President—Mrs. Mary Anderson
126 N. Fourth St., Royersford, Penna.
Secretary-Treasurer—Mrs. Thompson Fahringer
1721 Scattergood St., Philadelphia 24, Penna.

At the October meeting of the Society Mrs. Anderson gave a very interesting talk on the History and Evolution of Cacti which we are sending for the Journal.*

EDITH R. BUTLER, *Publicity Chairman*

*We are glad to publish this in a future issue.—Ed.

DESERT FLOWERS UNDER GLASS

The story of my experiences and delight in growing and flowering Cacti and Succulents in a small glasshouse in Christchurch, New Zealand

By MARJORIE E. SHIELDS

INTRODUCING THE AUTHOR

Gardeners throughout the world usually have a particular preference for certain plants. In the early days of exploration, English and European gardeners toiled to cultivate successfully the beauties of the flora of South Africa. At a later date, the flora of Australia was discovered by gardeners who vied with one another to cultivate the peculiar and rare plants from that continent.

Of recent years, smaller plants have become the vogue and it is now common to find collections of alpine plants, or dwarf desert plants being cultivated under suitable conditions. Two groups of the latter which have come very much to the fore are Cacti and Succulents.

In the Northern Hemisphere there are many specialists in this field. In the Southern Hemisphere, and particularly within Australasia, few have made detailed studies of them. The reason Cacti, and, to a lesser extent, the Succulents, are cultivated, is not only their small stature or their peculiar and odd shapes, but, overall, it is the outstanding beauty of their flowers. In the southern part of New Zealand for these plants to survive, the majority must be grown in glasshouses; thus they are not only protected from the cold wet conditions, to which they succumb, but from the frosts which occur. Those in the northern parts are usually able to grow their plants outside with outstanding success.

Over the years, Mrs. M. Shields has obtained a high degree of success in cultivating these unusual plants. Regardless of the season, when one visits her collection, the numerous plants in flower are a glorious sight to behold. To flower Cacti and Succulents under glass is a triumph and indicates success in cultural details. It is pleasing to know, therefore, that she has now written her experiences, thus making available to all the fund of information which she has acquired over the years.

Her notes dealing with cultural requirements, of repotting, seed sowing, methods of grafting, pests and diseases, and most important, the labelling and naming of plants will be of inestimable value to the beginner.

It is hoped that this series of articles which should be reprinted in book form will be read by all those who wish to grow these plants and who have at some time or another become interested. Those who have been keenly interested, but because of lack of clear instructions have allowed their enthusiasm and interest to wane will find the details they need. The plan is to give accurate information regarding cultural requirements under New Zealand conditions, but as there are other places in the world with similar climatic conditions, this information will be of use to a wide field of gardeners.

T. R. N. LOTHIAN
Director of Botanic Garden
North Terrace, Adelaide
Australia

INTRODUCTION

It was the coming of the flowers that first induced me to write about my glasshouse. The collection is now about six years old, and many of the plants are reaching maturity; and as the most often repeated question at cactus meetings, or anywhere cactophiles gather, is, "Will it flower?", it seemed to me that the time was opportune for someone who had cacti in flower, to write and tell others about them. For a time, I wrote monthly articles for the New Zealand Cactus & Succulent Journal, telling about the flowers in bloom for the month. That is how it started, for those articles proved so popular, I was asked by some of the members to rewrite them in book form, adding photographs, and this is the result. So here is the story of my glasshouse and the flowers that bloom therein.

Many books have been written and are still being written on the subject of cacti and succulents, but in none that have come to these far distant shores has the emphasis been on the flowers. Unless there is a picture, it is almost impossible to visualize the flower from the descriptions given—botanical descriptions written for identification purposes. This, of course, is most necessary for the ardent collector who takes his hobby seriously, but for the average enthusiast what has it to tell them? To those hobbyists who grow only a few plants on their window sills or in their sunporches, the language is foreign. They do not want to read about perianth-segments etc. All they want to know about a plant is what colour the flower is, its size, its claim to beauty, and when or if, it will flower. Such information is essential to them, as not having much room, they have of necessity to choose their plants with care. If you are looking for technical descriptions, then read no further, as this is not for you. But if it is descriptions of flowers in simple language you are looking for, then read on.

The collection comprises some twelve to thirteen hundred plants, of which the majority have been grown from seedlings and are just reaching maturity. The photographs are all of plants in my own collection, and I hope you will not be too critical in your judgment of them. I have never before used anything more complicated than a No. 2 Folding Brownie, and these photographs are my first attempt with a "proper" camera. Also please remember I have no choice of plants. There is ony one of each. Flowers do not last long, and the weather is not always suitable for photography.

It must be realised that the times given for flowering apply to my glasshouse only. We live in a warm, sunny valley and flowers will bloom sometimes two to three weeks earlier here than in districts only a few miles away. It makes a difference too, whether plants are in a glasshouse, or a window-sill, in a sun-porch, or grown outside in a sheltered spot. The hotter the conditions are for growing, or the hotter the district in which you live, the earlier the flowers will appear—and vice versa. Also the weather has a considerable say in deciding when a plant will flower, especially during the earlier

part of the season. A sunless winter will retard blooming by several weeks. My flowering times are only a guide and remember our seasons are different from those in the Northern Hemisphere.

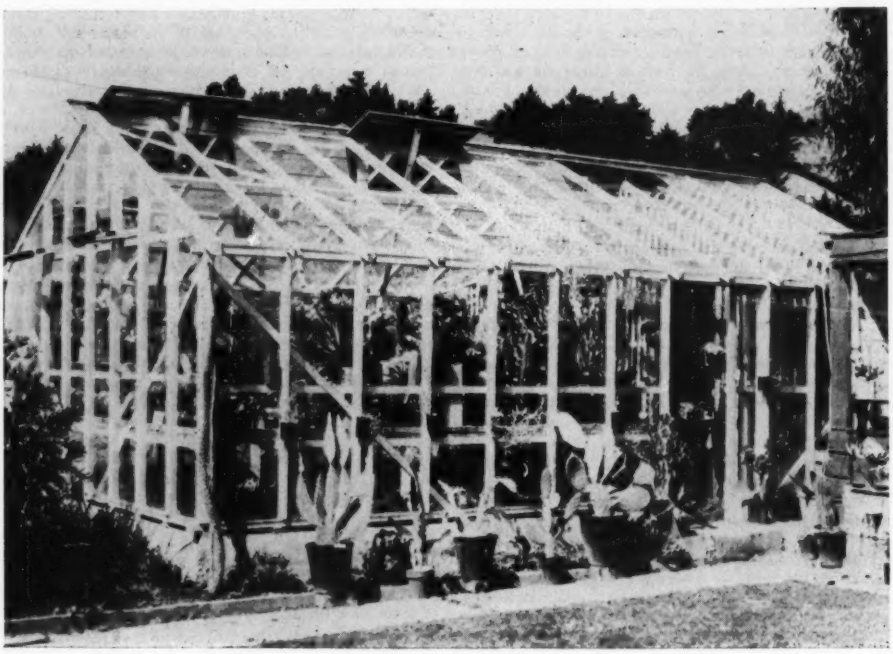
It is hoped that cactophiles and others will derive much pleasure from my experiences and at the same time gain some useful information about glasshouse work in general, and in particular about that very vital question, Will it flower?

MARJORIE E. SHIELDS

Horotane Valley,
Christchurch
New Zealand.

Here are our seasons:

Early Spring	August	Spring
Mid Spring	September	
Late Spring	October	
Early Summer	November	Summer
Mid Summer	December	
Late Summer	January	
Early Autumn	February	Autumn
Mid Autumn	March	
Late Autumn	April	
Early Winter	May	Winter
Mid Winter	June	
Late Winter	July	



THE GLASSHOUSE

A recent visitor said, "Why does your glasshouse look so different from other people's?" I could not answer that one, but later on he provided his own answer. "It is the high sides," he said, "and the clear glass. It has been puzzling me all the afternoon. Most glasshouses I have seen have much lower walls and so of course, have a lower roof, and that tends to be depressing. Yours is so light and airy." So it seems as though I have achieved my aim. Another reason is, that it is all clean and nicely painted. The benches are covered with white gravel, which helps to give it a clean look too. The pots and tins are all painted—most of them dark green. There are a few red ones for white spined plants and for succulents with red in their leaves. Some of the opalescent plants are in pale green containers, which show them up beautifully. So you can understand that as everything is painted and the glass is not shaded, it should look clean and bright.

Mine is not an orthodox glasshouse with the door at the end. My door is at the side; I was very insistent about it because it would be sheltered from every wind and could be left open all the time. Most glasshouses run north and south with the door in the north wall. This is the Southern Hemisphere, remember, and our sun is in the north, and as we live near the sea, a cool north-easterly is our prevailing wind which would blow right into the glasshouse if the door were left open. With my door in the west wall

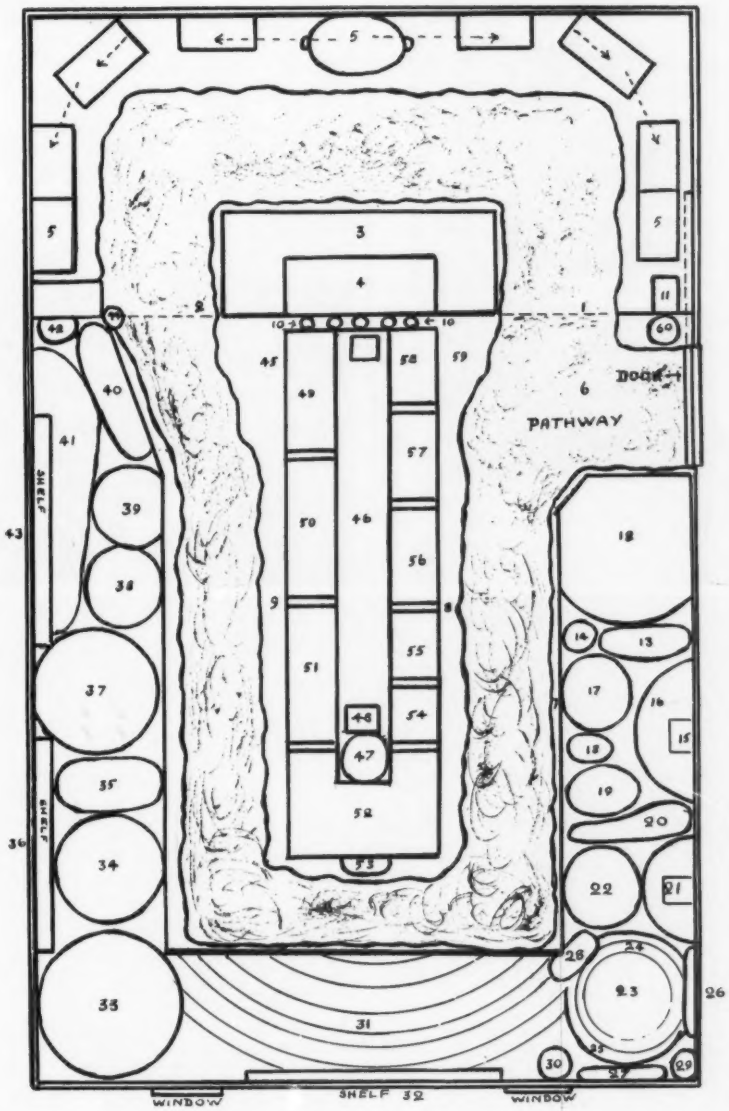


FIG. 3. Plan of the glasshouse

FIG. 4. The doorway

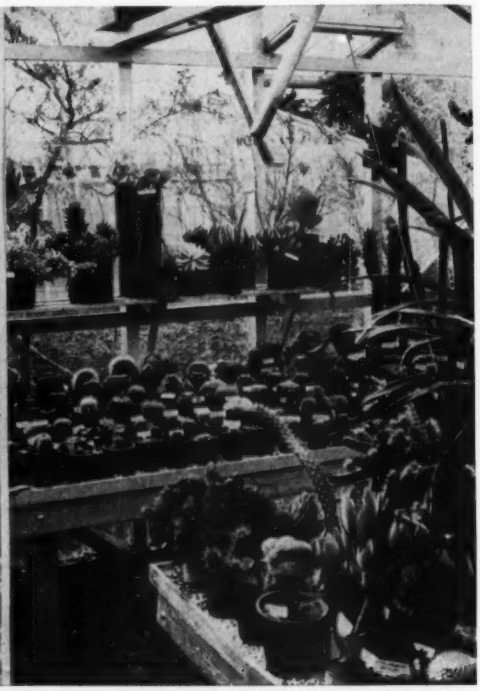


FIG. 5. Benches and shelving

it is well sheltered from this wind and the potting shed shelters it from the cold southerly which is our winter wind and brings gales of rain and wind and sometimes even snow.

The glasshouse is 22 ft. long by 12½ ft. wide. The height at the centre is 9 ft. and at the sides 6 ft. The door is 6 ft. from the southern end. Just inside the door on the right as you enter, there is a trellised partition. This divides the end 6 ft. from the rest of the house and this end has the walls and the roof trellised, to make it into a shade house for the Epiphyllums and other shade loving plants. There are two archways into the shade house (1 and 2, see plan), and the only bench in this part of the house is a short 5½ ft. one running across the house against the trellis. This is where the Haworthias live (3). The raised centre of this bench houses the Zygocacti and two large pots of Hylocerei (4). The Epiphyllums are in large tanks, two to a tank. These are hooked to the walls. Others stand on bricks to raise them above ground level (5). From the roof hang Billbergias and a large tin of mixed Rhipsalis, and the trellis is hung with many shade loving plants.

The rest of the house has a 2 ft. 3 in. bench running right round it from the door in the west to the trellis in the east. The centre bench is 10½ ft. long and this has a raised portion 1 ft. high by 1 ft. wide, right down the centre, making it easier to display the plants and to give it height.

The path which runs around the house (6) is made of broken pieces of concrete and flat rocks arranged as crazy paving. Many hours were spent on my knees before this path was finished, but it is worth all the hard work that was put into it. Most of this path is rock edged, to keep the soil back from the beds under the benches. Under the west bench there is a rock garden for the Stapelia family (7) and on the opposite side of the path under the centre bench the Gasterias look very happy (8). The other side of this bed under the centre bench is the home of some of the Aloes (9). The space under the east bench is left empty purposely. Any plant that may be suffering from the heat is put here to recover, and in the winter any frost tender plants find a home also under this bench where they will get a little more protection by having a wooden roof over their heads instead of a glass one, as there is no artificial heat used whatsoever.

Between the centre bench and the trellis, are five large Chloropicrin tubes (10) which house the Selenicereus. Chloropicrin is a gas used for sterilising glasshouses and it used to arrive in this country in these large containers. We cut the top and bottom off and stood them in a bottomless box full of gravel and soil, so the roots could penetrate right down to the ground if they wanted to. The Selenicereus seem to like their home; they are growing well and climbing all over the trellis. Another of these tubes is used as a container for some of the Rhipsalis.

A Pereskia growing in a large bucket under the east bench is making good use of the trellis to support it as it climbs over the archway and across the roof of the shade house. The west archway is festooned with Ceropegias and *Hoya carnosa* (11).

If you have followed the plan, you will now have a general idea of the layout of the glasshouse. Now to arrange the plants. This took a great deal of thought. Certain plants would have to be put in certain positions, because of their shape, and because of the sun. Would I arrange all the succulents on one side and all the cacti on the other? No. I decided against this plan, as better use could be made of the succulents, especially the tall growing ones—as they could provide shade for the more tender plants. Would I mix them all up and make a general display

FIG. 7. Chloropicrin tube

purely for effect? Again, no. I thought of the Mammillarias. A single Mammillaria when in flower is a little gem, but a group in flower is a never-to-be-forgotten sight. So I decided to keep

FIG. 6. Gardens under benches with Stapelias and Gasterias

FIG. 8. East bench

all the different groups together; groups of cacti surrounded by groups of succulents, grading sizes and colours, to make one glorious whole. So, everything planned in my mind, and on paper, I set to work. And this is what I accomplished.

Just inside the door on the west bench are the Echeverias (12); grouped according to colour and height. All the "furry" ones are together and are separated from the waxy ones by the green varieties as far as possible, with the larger plants placed at the back. Some are standing on tins, painted to match, to give them height and they are graded down to the smallest ones in front. They make a wonderful splash of colour, especially in the winter.

Next are the Oreocereus (13)—lovely hairy plants and in front of them are two wee Frailias (14). Then, further along, at the back there is a grandstand for the Astrophytums (15). This is a piece of timber 4 in. x 4 in. and 18 in. high. It is hooked to a sash to keep it rigid. If you follow the diagrams (Fig. 9) you will see that about 3 in. down there is a large screw-eye and about 3 in. lower is a second one. Into these screw-eyes wire hoops with a stem are fitted. These hoops need to be made of a heavy gauge wire and may be soldered at the joint, but if the wire is heavy enough this is not necessary and it is really better if not soldered, because then the size is adjustable. Slip a pot into the hoop and it is held firmly. Two or even three pots can be accommodated in the one set of screw-eyes. These of course, must be large enough to take the two or three wires comfortably. A large *Astrophytum ornatum* has pride of place on top of the stand and six smaller varieties are arranged round it, with five larger ones clustered at the foot. (16 to 21) are Bromeliads, Echinofossulocacti, Leuchtenbergia, Malacocarpi, Cleistocacti and Coryphanthas, which brings us to the Pleiospilos (22) and then to the Mesembryanthemum corner.

In the centre of this corner is a large tin for the Lithops (23). It measures 21 in. across and holds 37 small tins which are buried in gritty sand, the majority of them containing a Lithops. This method of planting gives a cool root run and, judging by the results, these plants seem to like it. Each Lithops is surrounded by small natural coloured stones, some of them being such a perfect match is is difficult to find the plant. The whole pan is full of colour, greens, blues, purples, browns, yellows and pinks; they are all there and the easiest way to find a Lithops is to

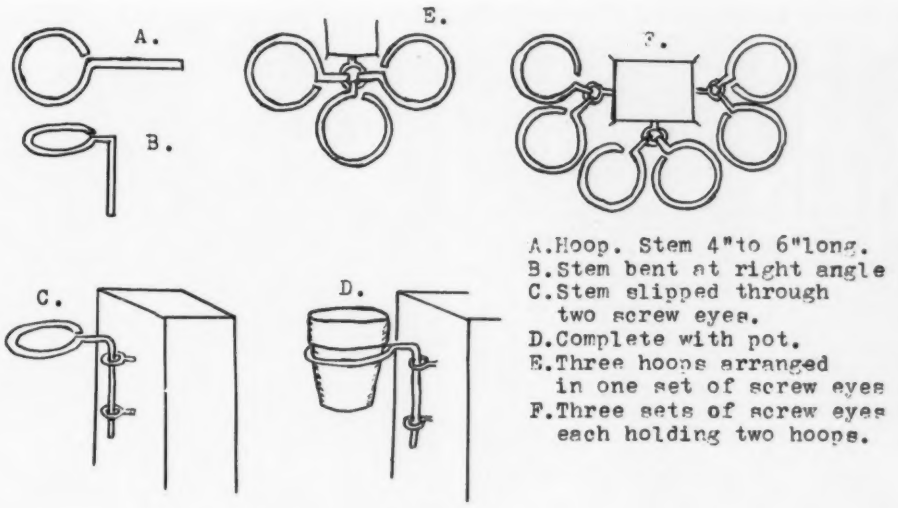


FIG. 9

look for the label. The Lithops' tin is surrounded by a circle of Faucarias (24) and a second ring of Conophytums, Argyrodermas, Gibbaeums and Dinteranthus (25). The outer circle on one side contains odd Mesembryanthemums (26) and on the other side are the Cheiridopsis (27). Immediately in front of the Lithops is a pumice boulder of Titanopsis (28) while a large tin of Glottiphyllum occupies the far corner (29). Odd shrubby Mesembryanthemums hang in tins on the glass-bars, posts, and anywhere else where there is room to put a tin. This corner is very gay in the autumn and, when everything reaches flowering size, if they all flower at the same time the result should be breath-taking. It could happen this year!

A large saucepan containing *Urbinia agavoides* (30) with a small *Urbinia purpusii* in front of it, brings us round to the north bench and to the Mammillarias (31). There are over one hundred in this group and it took a great deal of thought, arranging and rearranging before I housed them to my satisfaction.

Above the Mammillarias is a shelf for the Cotyledons, Dudleyas, and the Pachyphytums (32). They like this sunny spot and are well away from exploring fingers, which would soon spoil their beauty. That brings us to the next corner where we find all the odd members of the Cereus family (33)—in fact, everything but the Cereus itself. It is a quite colourful corner, with blue plants with black spines (Myrtilocactus), yellow spined plants (Borzicactus), white haired ones (Cephalocereus), a monstrosity carved out of jade (Lophocereus), etc. It is very interesting as well as being colourful.

The Crassula group (34) is the first group on the east bench. Some are hanging in baskets from the shelf above, others are in tins, and in the centre of the group is a large enamel saucepan where the mimicry ones live.* Up above on the shelf already mentioned (36) is a mixed assortment of Crassulas and Euphorbias. This used to be a shelf of blue Kleinias and for a while it looked beautiful, but unfortunately most of them grew too tall and rampant and not suitable for a small glasshouse, so they had to be disposed of. The shelf is not as attractive as it was when blue, but that cannot be helped. *C. perforata* hangs from it, and spreads out its long branches, giving a little shade to its smaller relations on the bench.

Now we come to a very green group, the Euphorbias (37). Some of these are growing so large I do not know what the outcome will be! But that is a problem for the future. (38 is the Echinopsis group, annd next to them are the Adromischus (39), and then the Rebutias (40). These three groups are all near the front of the bench and as they all needed a little shade I grouped the taller growing Aloes and the Cerei (41) behind them. Right against the trellis, also giving shade, is *Portulacaria afra* (42). The "Beautiful Shelf" (43) is above the Aloes and the Cerei. This is a shelf of Sedums mostly, and is a focal point of interest to the majority of people who visit the glasshouse.

We have now reached the trellis and the archway into the shade house. I have already de-

*(35) is the Ferocacti group.

FIG. 10. Entrance to shade house

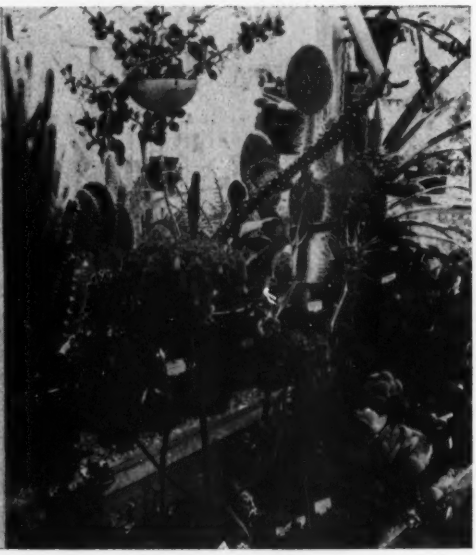


FIG. 11. The centre bench

scribed the shade house so we will not go in just now, but, on the archway are several pendant Kleinias (44) and on the shade-house side are Haworthias in coconut shells hanging on the archway. The centre piece of trellis between the two archways holds many plants, as well as the Selenicerei mentioned before.

Where the centre bench and the trellis meet, you will notice a small triangular plot of ground on each side. On the side we are dealing with now, I planted *Aloe ciliaris* (45) in this plot and the difference it has made to this plant is amazing. When it was in a pot it was a single stem with a straggling rosette on the top of it, now there are many stems with large rosettes, some of them being 6 ft. long, one actually reaching the roof, and I can see that in a year or two it is going to make a beautiful show on the trellis. Of course it is only natural that plants will grow better when they are planted directly into the ground and their root room is not restricted by a pot. I think many plants in pots must suffer from claustrophobia! Also in this little plot is *Bryophyllum aliciae*. This plant astonished me. It grew 6 ft. high and had an enormous bunch of beautiful flowers.

The raised portion of the centre bench, I thought would be an ideal place for Opuntias (46). They would be out of harm's way up there, and would give height to the glasshouse. The idea has proved a happy one. Visitors do not get covered with glochids and the plants get all the sun there is. The lower portion of this bench contains Lobivias, Gymnocalyciums, Notocacti, Echinocerei, Parodias, Espostoas, Thelocacti, Neoporterias and a host of other choice plants, interspaced with Bryophyllums and Kalanchoes (47 to 58).

This brings us again to the trellis, and in the triangular plot on this side, is a large plant of Crassula falcata (59), and grouped around it are some Bromeliads in tins.

There is a small plot of ground between the trellis and the doorway (60), and here I have planted *Nyctocereus serpentinus*. It has already reached the roof and will now have to be trained across it. Is has branched from the base too, thus proving how much it appreciates its natural root run.

If you have followed this description with the plan of the glasshouse spread out before you, you should have a fairly clear idea in your mind of the general lay-out, and this will be a great help to you as you read. Next month I will show you my colourful Echeverias.

ICONES PLANTARUM SUCCULENTARUM

5. *Gymnocalycium westii* P. C. Hutchison[1]

By P. C. Hutchison

In 1936, during the First University of California Botanical Garden Expedition to the Andes, James West collected in Bolivia living specimens of the cactus described here as a new species. A single plant, the clonotype, still survives in cultivation here and vegetative propagations of it have been distributed to others for introduction. The species fits conveniently into the genus *Weingartia* Werdermann, which, however, I reduce to *Gymnocalycium* Pfeiffer. A discussion of the other taxa which have been included in *Weingartia* by various authors is in preparation but several of the necessary new combinations are given below. All of these taxa are in cultivation here and several will be figured in these "Icones."

Gymnocalycium westii P. C. Hutchison, *sp. nov. Radices tuberosae, apice constrictae; plantae demum caespitosae, caulibus globosis ad cylindricis, usque ad 8 cm. diam. et 20 cm. longis, costis 14, in podariis hexagonis valde gibbosis divisis, spinis radialibus 9-11; centralibus 1-4; flores lutei, solitarii, tepalis patentibus oblongis acutis, leviter undulatis; fructus globosus 8-9 mm. diam.; semina galeata tuberculata obscure nigra irregulariter compressa, ca. 1-5 mm. diam., strophiolo perspicue eminente.*

Roots tuberous, strongly constricted at apex. Plants solitary or caespitose, the *stems* globose to cylindrical, up to 8 cm. in diam. and 20 cm. tall, dark green or reddish tinged, the apex not felted, flattened, the ribs 14, spiralled, divided into hexagonal podaria *ca.* 15 mm. wide and 1 cm. high and prominently gibbous below *areoles*, these 5 to 7 mm. long, 2 to 4 mm. wide, yellow-brown or white-felted, *ca.* 1 cm. apart, the *radial spines* 9 to 11, 5 to 30 mm. long at one areole, somewhat erect, straight or slightly recurved, white with light brown to brown tips, grading into the undifferentiated 1 to 4 *central spines*, these 20 to 35 mm. long; uppermost spines longest, the oldest spines turning white or gray.

Flowers apical, solitary, erect, tubular-campanulate, bright golden yellow, glistening, 3.5 to 4 cm. long, 3.5 cm. broad, the tube 2 cm. long, 6 to 7 mm. diam. at base, 12 mm. diam. at apex, the *bracteoles* clasping, obovate-acute, wider and shorter than the perianth segments, green-tinged to brownish on the lower half of the tube, yellowish above, the bases long-decurrent, the *tepals* spreading, oblong, acute to acuminate, up to 1.5 cm. long, 4 to 5 mm. wide, gently undulate, the margins often raised; *stamens* numerous, lining the tube to the apex in a continuous series from the nectaries to the tube-throat, *ca.* 1 cm. long, shorter above, the filaments white, the anthers yellow; style included, 2 cm. long; stigma lobes 6, pale yellow; nectaries obscure, the nectar-chamber *ca.* 1 to 1.5 mm. wide and *ca.* 3 to 4 mm. long, almost filled by the style.

Fruit globose, 8 to 9 mm. diam., indehiscent (so far as observed), the perianth withering-persistent. *Seeds* galeate, dull black, *ca.* 1.5 mm. diam., irregularly compressed by adjacent seeds in the fruit, the testa tuberculate, the hilum oval, 1 mm. long and 0.5 mm. wide, the strophiole projecting conspicuously.

Bolivia. Dept. Potosí, near Cuchu Ingenio, 40 km. south of Potosí, *leg.* James West 6367, Mar. 21, 1936, *University of California Botanical Garden 36.1751* (UC-Holotype, US-Clonotype).

This species grows among rocks on the slopes of an arid canyon at 3,500 meters altitude. West recorded the diameter (of caespitose clumps?) as 15 to 20 cm. and further noted that the specimens were usually caespitose and that they were usually buried in the ground nearly to the top.

On older growth the ribs become obscure or disappear, leaving spirally arranged areoles flattened against the stems. The older growth is scaly gray-brown, but young offsets, which appear from either young or old areoles above the base of the plant, are typically reddish-tinged at first, at least on the under side of the tubercles. There is a very strong constriction between the plant body and the stout, very tuberous root. A similar constriction is conspicuous in *Gymnocalycium neumannianum* (Backeb.) P. C. Hutchison, *comb. nov.*,[2] and is obscure or absent in the closely related species *Gymnocalycium fidaianum* (Backeb.) P. C. Hutchison, *comb. nov.*[3]

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[1] University of California Botanical Garden, Berkeley, Contribution Number 142.

[2] *Echinocactus neumannianus* Backeb., Kakteen-freund 2: 90, 1933; *Spegazzinia neumanniana* Backeb. in Backeb. & Knuth, Kaktus-ABC, 299, 1935; *Weingartia neumanniana* Werd., Kakteenkunde *1937*: 21, 1937.

[3] *Echinocactus fidaianus* Backeb., Kakteen-freund 2: 117, 1933; *Spegazzinia fidaiana* Backeb., Blät. f. Kakteenf. *1934 (4)*: gen. 75, sp. 2, 1934; *Weingartia fidaiana* Werd., Kakteenk. *1937*: 21, 1937.

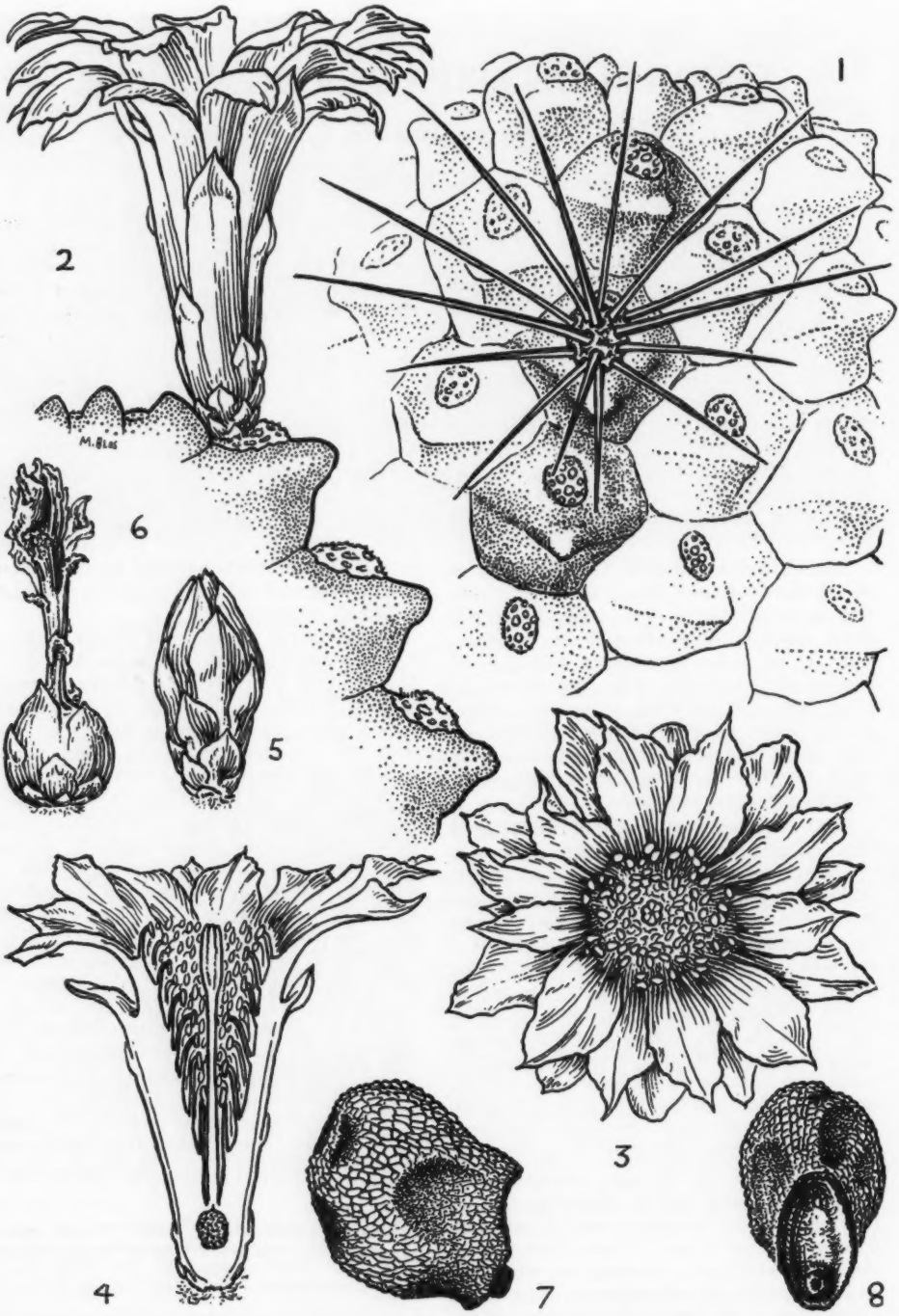

FIG. 12

Gymnocalycium westii Hutchis., the clonotype. 1. Frontal view spine-cluster and podaria. 2. Flower and podaria, lateral view. 3. Flower, apical view. 4. Flower, longitudinal section. 5. Bud. 6. Fruit. 7, 8. Seed. 1-6, x 2. 7, 8, x 20. Drawing by Mrs. M. Blos.

FIG. 13
Gymnocalycium westii Hutchis., the clonotype. Stem apex, the flower limb not fully expanded because of adjacent spines. *Ca.* 0.9 x.

In *G. westii* a short groove above the areole is sometimes present on young podaria just below the stem apex. This is generally obscure to absent on older podaria although it may tend to persist on vigorous grafted specimens out of doors. In *G. pulquinense* (Cárd.) P. C. Hutchison, *comb. nov.*,[4] a less conspicuous groove is sometimes present on immature specimens; I have not examined mature plants of this species. *G. pulquinense* var. *corroanum* (Cárd.) P. C. Hutchison, *comb nov.*,[5] has a strikingly conspicuous groove. *G. fidaianum, G. neuman-*

[4] *Weingartia pulquinensis* Cárd., Revista de Agricultura (Cochabamba) *No.* 6: 26, 1951.

[5] *Weingartia pulquinensis* Cárd. var. *corroana* Cárd., *ibid.*, 30, 1951 [as var. *corroanus*].

FIG. 14
Gymnocalycium westii Hutchis., the clonotype. Entire plant, showing the constriction of the apex of the rootstock. *Ca.* 0.5 x.

nianum and *G. neocumingii* (Backeb.) P. C. Hutchison, *comb. nov.*,[6] lack such a groove.

Dr. Martin Cárdenas of Cochabamba, Bolivia, writes me that he has never found this species. However at Cuchu Ingenio he collected *Cleistocactus tupizensis* (Vaup.) Backeb., *Oreocereus celsianus* (Lem.) Riccob., *O. trollii* (Kupp.) Backeb., *Parodia maassii* (Heese) Berg., *Trichocereus poco* Backeb., and *Cereus tacaquirensis* Vaup. (= ? *Trichocereus*), all at an altitude of about 4,000 meters. At Camargo, near Cuchu Ingenio, he collected a *Weingartia* that he thought might be a new species. However, a juvenile plant of this collection that he has sent here appears to be very similar to *Gymnocalycium neumannianum*. Dr. Cárdenas also mentioned that *G. westii* appeared close to, if not identical with Ritter 371, from Río Chico, north of Sucre, and Ritter 372, from Aiquille, in the Province of Campero, Department of Cochabamba. I have not had an opportunity to examine material of these two collections, living and pressed material of which are presumably under study in Zürich, Switzerland.

Gymnocalycium westii has proved to be of easy culture in Berkeley and grows well outside either on its own roots or as a graft on *Trichocereus spachianus*. It has survived 26°F. without damage and flowers at irregular intervals during the warm summer months.

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[6] *Weingartia neocumingii* Backeb., Kakt. u. and. Sukk. *1950 (2)*: 2, 1950; *Echinocactus cumingii* Salm-Dyck, Cact. Hort. Dyck. Cult. 1849, 174, 1850, *non* Hopf., 1843. This is *Lobivia cumingii* of Britton and Rose. (Cactaceae *3*: 49, 1922) as to description, but not as to name or type. As Backeberg (*l.c.*) states, *Echinocactus cumingii* Hopffer is probably a *Neochilenia* (= *Neoporteria, sensu latu*). However it is so inadequately described that the name, together with the numerous combinations based on it, should probably be dropped.

NEWS FROM THE RESEARCH BOARD

With the Christmas season so recently passed it would seem that people would have little time to think of their plants but it seems from the correspondence and questions received by the Board that the reverse is the condition.

We have received a large number of requests for information on many subjects and all of them have been answered. The different committees of the Board are all doing their jobs very satisfactorily and our work is proceeding smoothly.

The Plant Distribution Committee has received a shipment of new plants of some twenty genera which have not been previously offered and which, when rooted and ready, will be included in the next list published, which we hope will be in the March-April Journal, so watch for it. Remember that these plants are made available on a basis of "first come, first served" so that the sooner your request is sent in the better your chance of receiving the plants you want. Always include the amount necessary to cover the cost as no request will be filled unless accompanied by the money.

Our Slide Committee is working on some new slide sets or new arrangements of the older sets so you and your groups can have visual information about the plants and the country in which they grow.

A new service is being established, that of making seed of cacti and the other succulents available to the members. It will be some time before sufficient variety and quantity will be assembled but we hope before too long to be able to announce this service.

The Plant Identification service is still functioning and we will be glad to try to identify any plants you send in for that purpose. If you want the plants returned to you, be sure to include enough postage for their return.

Any suggestions for further services which will prove helpful to you will be gladly received and given careful study and consideration and if they are feasible we will make every effort to make them available to you. Let's hear from all of you.

THE RESEARCH BOARD: Homer Rush *Chairman,* Scott Haselton, Harry Johnson Sr., Dr. Robert T. Craig, Don Skinner.

ICONES PLANTARUM SUCCULENTARUM

6. *Adromischus bicolor* P. C. Hutchison[1]

By P. C. HUTCHISON

This new *Adromischus* species was first received here in 1953 from Mr. Harry Hall of the National Botanic Garden, Kirstenbosch, South Africa, and again, the following year, from E. A. Pienaar of Salisbury, Southern Rhodesia. Both collections were from the vicinity of Steytlerville. Pienaar noted that it grew in flint and quartz under low shrubs and was associated with *Lithops terricolor* N. E. Br.

A plant of the Hall collection flowered for us in 1953 with a yellow perianth limb centrally striped red on each lobe. In the two following seasons the limb was white with a central red stripe. As is usual with most *Adromischus* species, the leaves tend to be variable in size and, to a lesser extent, in shape. Younger leaves may be slightly longer than broad, but most usually all leaves are as long as broad or approximately so.

The collection of Pienaar is, at present, the more attractive as its leaves bear much more silvery marmoration than do those of the type. In addition the typical red streaks of the lower half of the perianth tube, in the Pienaar collection, are so thick as to make an almost solid coloring of the tube base. The upper part of the tube is a brighter green and the bud apex is the same color as the base. Thus the floral tube is red on the lower half, abruptly bright green, then red again at the apex and consequently the plant in bud is quite attractive. The species is very slow to grow and will probably never be common in cultivation, although it unusual form and general attractiveness make it a desirable addition to any collection of living plants of this genus.

Adromischus bicolor P. C. Hutchison, *sp. nov. Radices tuberosae; caules brevissimi; folia deltoideo-obovata, usque ad 4 cm. longa lataque, viridia et argenteo- et rubro-marmorata vel maculata, apice vulgo rotundata roseotinctaque; flores singuli vel in cymulis 1-3-floris positi; perianthii tubus intus luteus, externe infra medium ruber vel rubescens, supra medium laete*

[1] University of California Botanical Garden, Berkeley, Contribution Number 143.

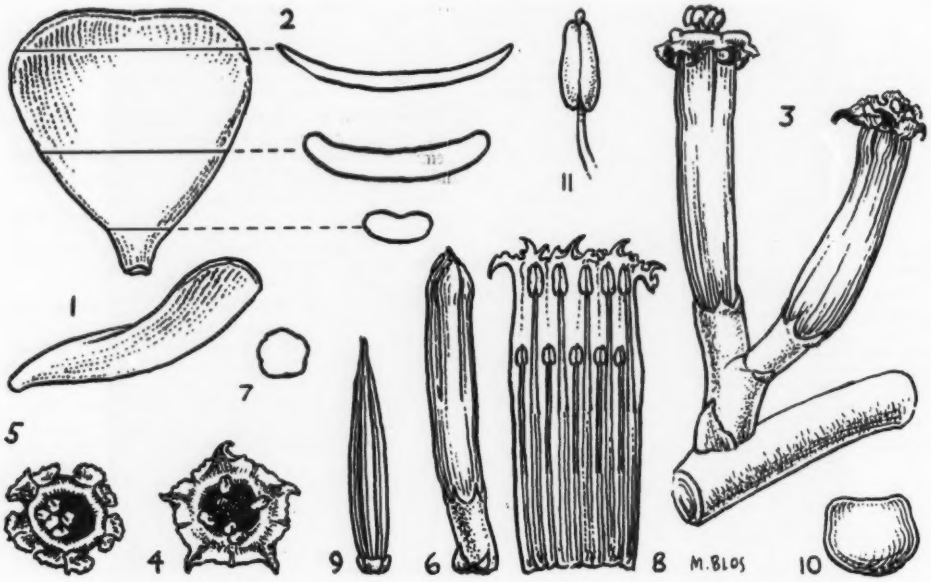


FIG. 15

Adromischus bicolor Hutchis., the clonotype, U.C.B.G. 53.1109-1. 1. Leaf, side view. 2. Leaf, top view and cross-sections. 3. Flower. 4. Perianth limb, spreading. 5. Perianth limb, fully expanded. 6. Bud. 7. Cross-section perianth tube at midpoint. 8. Stamen insertion. 9. Carpels. 10. Nectary scale. 11. Anther. 1, 2, nat. size. 3-9, x 3. 10, 11, x 9. Drawing by Mrs. M. Blos.

viridis, apice ruber, limbus albus vel lutescens, medium versus rubro-lineatus, demum reflexus et sinubus plicatus; filamenta flava.

Roots tuberous. *Stem* obsolescent. *Leaves* dark green marmorated or spotted silver and red and often suffused with a rose tinge near the apex, up to 4 cm. long and broad, deltoid-obovate, the apex either rounded, straight or barely indented; lateral margins rounded, the apical margin acute, obscurely keeled; upper face concave to flattened; lower surface convex; leaf base sometimes oval in cross-section up to as far as 1 cm. from the base. *Inflorescence* simple or branched, to *ca.* 25 cm. long, the lower third with obscure sterile bracts, the 12 to 45 flowers arranged spirally, single or in 1-3-flowered cymules at about right angles to the stem. *Pedicels* 3 to 5 mm. long, glaucous gray-green, 2 mm. in diam. *Calyx* lobes deltoid, acute, *ca.* 1 mm. wide and 1.5 mm. long. *Perianth* tube on the inside yellow, on the outside green or yellow-green streaked irregularly to densely with red below, and again suffused with red at the apex, 13 mm. long, 2.5 mm. in diam., straight or barely curved; cross-section obscurely rounded-pentagonal; sinuses obscure in the upper half of the tube; limb obscurely or falsely lobed, spreading then reflexed against tube, yellowish to white with a red or reddish purple stripe down the center of the lobes, these ovate-deltoid, acuminate, the margins forming pleats at the sinuses, the apices recurved. *Stamens* inserted at about the middle of the tube, biseriate, the two series *ca.* 2 mm. apart, the anthers of the upper series exserted at anthesis, all filaments yellow, *ca.* 6 mm. long, those of the upper series broader. *Carpels* green, the style included. *Nectary scales* squarish with somewhat rounded corners, the apex slightly emarginate, yellowish. Chromosome number: $n = 9$.

South Africa, Eastern Province, Steytlerville Div.: Kleinpoort near Steytlerville, *leg.* H. Hall, *University of California Botanical Garden 53.-1109-1* (BOL-Holotype); 35 miles from Steytlerville towards Willowmore, *leg.* E. A. Pienaar, *University of California Botanical Garden 54.-464* (BOL).

Additional herbarium material of both collections will be prepared in subsequent seasons and deposited at K, PRE, UC and US. Two clones of the type collection and seven clones of the Pienaar collection are cultivated in Berkeley.

This new species belongs in the group which includes *Adromischus hemisphaericus* (L.) Lem. and its allies, but differs from them all by its

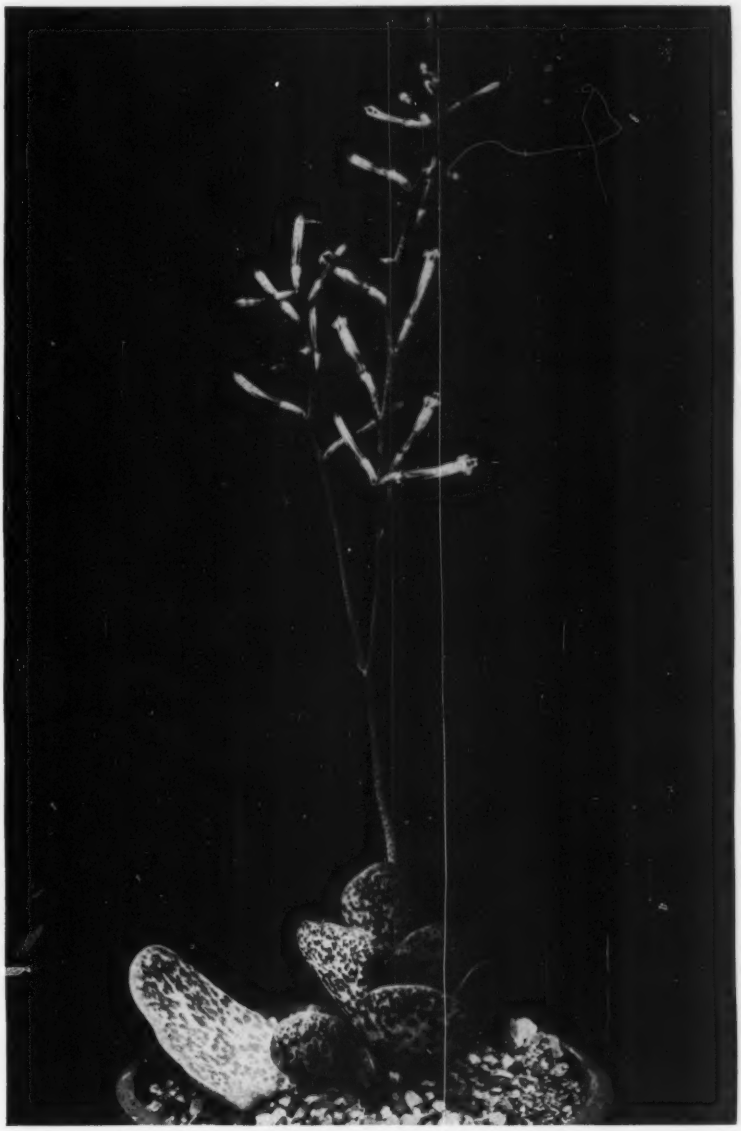


FIG. 16
Adromischus bicolor Hutchis., the clonotype, U.C.B.G. 53.1109-1.
Slightly less than natural size.

tuberous roots, obsolescent stem, dwarf habit, and marmorated green, silver and red leaves. None of the related species which I have examined have a yellow perianth-tube interior.

The specific name emphasizes, in particular, the bicolored leaves and flowers. In the latter the outer perianth-tube is usually red in the lower half and green above, an arrangement of color that has not been observed in other species of the genus.

Adromischus bicolor seems to prefer the same cultural treatment as other dwarf species of the genus, namely, small pots, excellent drainage, and strong light.

NEW MEXICO CACTUS AND SUCCULENT SOCIETY

The July meeting of the New Mexico Cactus and Succulent Society was held on the 20th at 7:30 P.M. at the home of Mrs. Ann Sherman with Mrs. Charles Furrer as co-hostess. Members gathered in the patio where a screen was set up and, after a short business meeting, colored slides were shown with interesting comments by Prince and Reva Pierce on their vacation trip to Mexico. In flower were Cephalocereus palmeri, Cereus peruvianus, Dolochothele longimamma, orchids and a twenty-year-old sotol or Dasylirion wheeleri. Not in flower were Echinocactus grusonii (golden barrel), Mammillarias hahniana and parkinsonii, and a long line of Cephalocereus senilis in the greenhouse of Mr. Willi Wagner at Cadereyta des Montes, Queretaro. Mr. Wagner is a nephew of the late Senora Caroline Schmoll whose husband started selling cactus as a business in Mexico. Prince had studied Spanish for this trip but Reva's knowledge of German was more of a help in their visit with the Wagners. Pictures of the Wagners and their cacti were most interesting. Oh, those golden barrels! Other slides on the program were taken by Maynard Blumer on the field trip May 27th of Pediocactus simpsonii in habitat and others. Ann Sherman had a picture of the members who made the trip.

The August 24 meeting was at the home of Jean and Ed Nadolny, those same Nadolnys mentioned in Ladislaus Cutak's Spine Chats in the November-December, 1955, Journal. The business included plans for another field trip and an exhibit at the New Mexico State Fair. Then Ed showed some 150 colored slides he had taken of his cactus collection, among them Toumeya peeblesiana (navajoa) and the following in bloom: Pediocactus simpsonii, Coloradoa mesa verde, Mammillaria wrightii and Toumeya papyracantha. He winters many of his cacti in coldframes in the back yard and has great success in flowering them.

On September 9th eleven members went on a field trip northwest of Albuquerque on the slopes of the Jemez Mountains near Cuba and Regina and over to Abiquiu. Not too many specimens were found but there was variety—Echinocereus viridiflorus and triglochidiatus, Coryphantha vivipara, Opuntia fragilis and a few Mammillaria whiplei. The highlight of the trip was Luke Vortman's finding a crest of Opuntia polyacantha.

The regular September meeting was held the evening of the 21st at the home of Edward and Katie Myers who moved here not too long ago from Virginia. The program was devoted to Haworthias with a display of specimens of setata, chalwinii, cymbiformis, retusa, pilifera, margaritifera, tessellata, coarctata, truncata and maughani from collections of Viola Blake, Prince Pierce and Ann Sherman. Viola also brought along a couple of Japanese cactus catalogs to pass around.

State Fair.—On the evening of September 28th members having specimens to exhibit brought them to the Agricultural Building at the Fairgrounds where flower shows are held during the nine days of the Fair. President Prince Pierce brought a typewriter, cards, reference books, and Scotch tape so that uniformly typed cards could be attached to each pot. The display was arranged on step-type shelves with blooming Aptenia cordifolia in a wooden basket in the center among aloes, a blooming Stapelia gigantea, Ferocactus, crested cacti, several grafted cacti and other succulents. It was classed as an educational exhibit, the same as the spring flower show, remaining for the nine days and attracting a lot of favorable attention.

Our October 21st meeting was on a Sunday afternoon at the home of Viola and Leon Blake so we could see the greenhouse and big new lath-house. The business meeting in the spacious new recreation room was followed by an account by Prince Pierce of his trip in Arizona with his friend, Mr. N. A. Paradine of Phoenix. He showed us a potted specimen of what is believed to be a new genus, Pilocanthus paradini, discovered by Mr. Paradine and turned over to Mr. Bernard Benson of the Boyce Thompson Southwest Arboretum for correct botanical description. Prince then read an article by Mr. Marshall in the Saguaroland Bulletin in which this same cactus was written up as a Pediocactus and its discovery claimed by Gus Herman. This caused some interesting discussion. Also at this meeting Dr. Castetter stated Escobaria sneedii has been reported from El Paso near the border of New Mexico and he believed it might also be this side of the border, something to look for if any members should be down that way.

The November 25th meeting was also on a Sunday afternoon at the home of Dr. and Mrs. Castetter so we could view the outdoor collection of cacti. Dr. Castetter is president of the Iris Society and also has an extensive iris collection. Welcomed back from a year in Labrador was Charlie Furrer and we hope to see in January some of the pictures he took there with his new Leica. We were also glad to know that Prince had a letter, with check for 1957 dues, from Vice-President Donald Bauer, telling us he and Gloria like their new location in Phoenix, Arizona, but want to continue membership in our Society.

At the business meeting the nominating committee presented a slate of officers for 1957 and the following were elected: President, Mrs. Ann Sherman; Vice President, Edward Nadolny; Secretary, Betty Vortman; Treasurer, Luke Vortman; Affiliate Director, Charles Furrer. For the program Prince Pierce showed slides from his Arizona trip: Navajoas growing in grama grass and stones on Marcou Mesa between Holbrook and Joseph City, also Pilocanthus paradini under sagebrush in limestone formation in Houserock Valley on the edge of the Kaibab Plateau. He read an article from the Saguaroland Bulletin about the Pilocanthus paradini now conceded to be Mr. Paradine's discovery. It is a new genus and we are anxiously awaiting the description being written by Mr. Benson of the Boyce Thompson Southwest Arboretum.

Before the meeting adjourned the subject of Community Club Awards, sponsored by local merchants and some national firms, was discussed. It was voted to participate in the hope of adding to our treasury and Prince distributed the Buyer's Guides. And because Leonard's Restaurant is one of the sponsors, Viola Blake suggested we have a Christmas party there and was immediately appointed chairman of that project.

The party came off on December 8th, a dinner in a Christmas-decorated private room at Leonard's with twenty-two members and guests present. Viola provided a centerpiece of cacti and succulents, also small containers of cuttings or seedlings at each place. Also at each place was a place-card of a (colored paper) roadrunner perched on a piece of dried cholla tied with red ribbon to a (colored paper) pad of prickly pear. Each card had a number as well as the name and our young mascot Connie Blake called the numbers on packages deposited on a table as members had arrived. There were interesting and mirth-provoking gifts, as well as cacti, the most original being won by Prince Pierce—a new variety of prickly pear "discovered" by Sue and Maynard Blumer—a real pear in a pot with an artificial flower where the stem should have been, the prickles being goathead (sandbur or puncturevine) seed pods. Prince said he would take a picture of it for the Journal!

ANN SHERMAN
(Retiring) Affiliate Director

THE OPUNTIA PULCHELLA COMPLEX

By LYMAN BENSON
Pomona College, Claremont, California

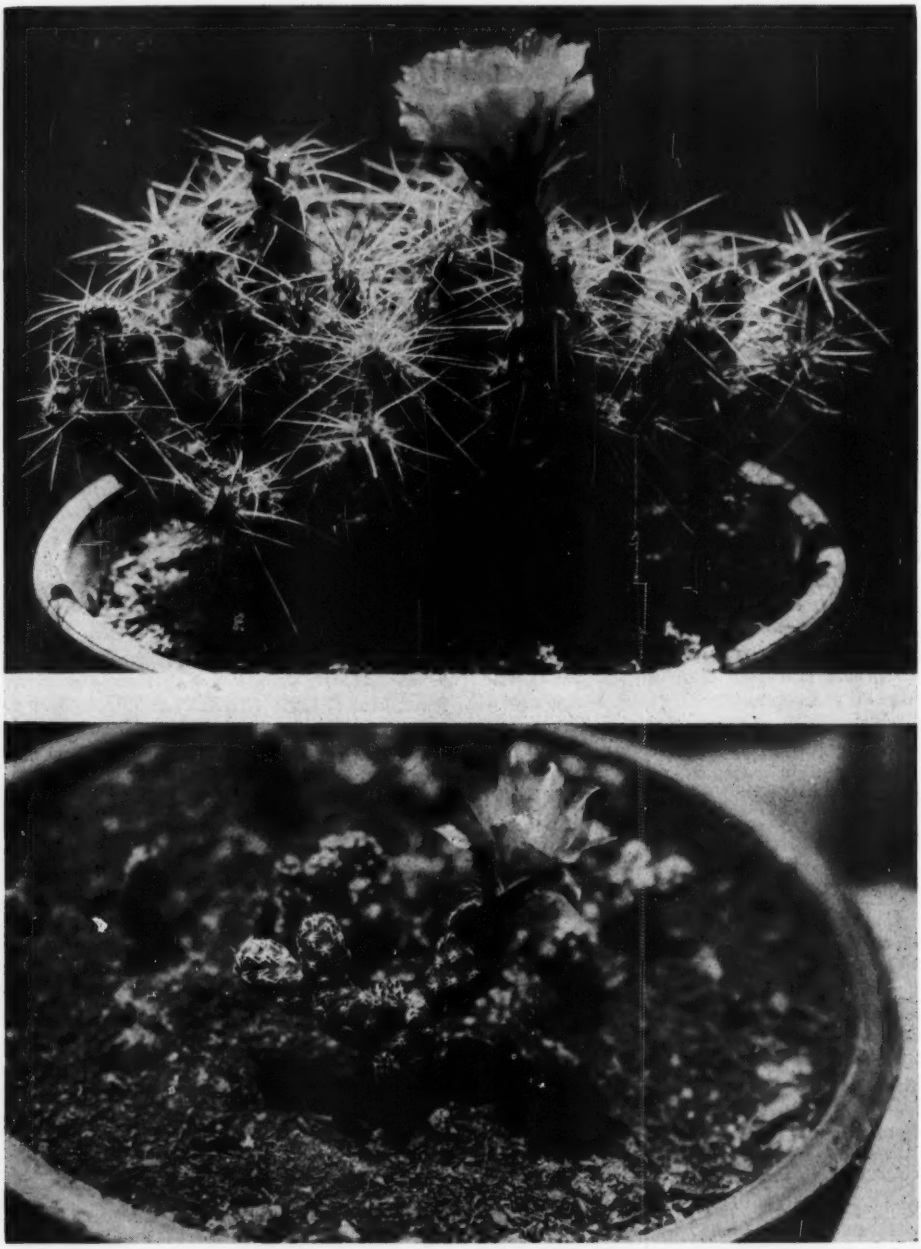
Until recently the *Opuntia pulchella* complex of small chollas has been among the least known cacti. These plants occur in an area where cacti in general and they in particular have been little sought and where all species are inconspicuous. The group centers in Nevada, and it occurs in the adjacent portions of Utah and northwestern Arizona. It has been reported from the edges of Idaho and California, but the writer has seen no specimens from those states.

Although some forms stand about four inches above ground level and form clumps at least a foot in diameter, many are only two or three inches high and their appearance may be similar to that of juvenile forms of the larger chollas. Both inconspicuousness and restriction to highly specialized habitats have limited human observation of these chollas, and the object of this paper is to call attention to the need for careful study of many individuals before reaching final conclusions concerning what appears to be an exceedingly complex natural population system.

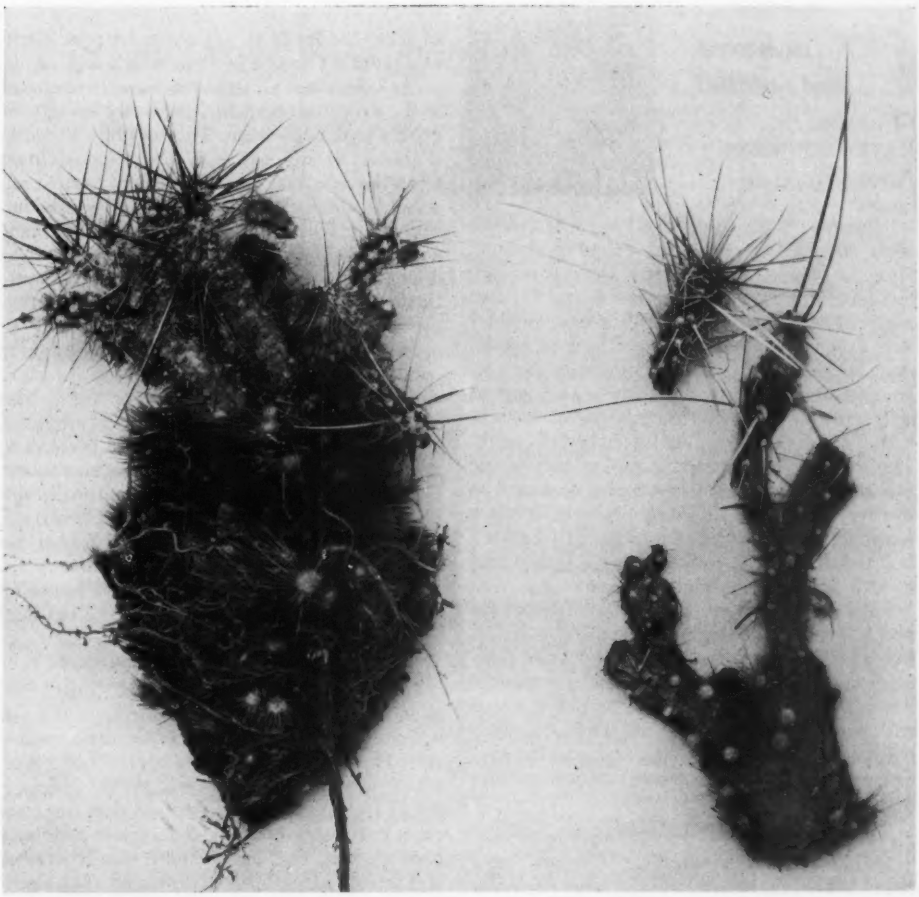
Opuntia pulchella Engelm. (cf. L. Benson, Cacti of Arizona ed. 2. 42. 1950) is a relative of *Opuntia stanlyi*, a complex species consisting of several varieties occurring from California to western New Mexico and southward, and it is clearly a member of the group of chollas forming the series *Clavatae*. Nevertheless the forms of the species showing this relationship grade into others for which the affinity is not obvious. Consequently several collectors of this group have proposed or contemplated proposing new species or even genera. So far, almost no one appears to have thought of a relationship of the short-spined forms to *Opuntia pulchella*. This is understandable because this affinity is not suggested unless the entire complex of forms is taken into account and because arriving at the *Clavatae* in a key seems unthinkable, especially to one familiar with such species as *Opuntia clavata* and *Opuntia stanlyi*.

Although presence of transitional forms in spine characters and other vegetative features together with similarities of the flowers links a host of forms to *Opuntia pulchella*, present data are not adequate for determination of how many taxa are involved in the complex. At present it is not possible yet to determine whether their status may be specific or varietal or whether they may be all forms of a single complicated unit not capable of reasonable division into even varieties. At present there is as much to be said in favor of one of these possibilities as another; certainly, however, the forms are interrelated closely. Solution of the classification problem depends upon thorough analysis of the forms occurring in many field populations.

Daston (American Midland Naturalist 36: 661-662. *f. 1-3.* 1946) described and named the proposed genus *Micropuntia* based upon three new species reported to occur on the property of the Desert Range Experimental Station between Milford, Utah, and the Lehman Cave, Nevada. Inspection of the illustrations and the descriptions indicates *Micropuntia* to be based upon plants of the *Opuntia pulchella* complex (cf. photographs reproduced in the Cactus and Succulent Journal 28 [6]: 194-195. *f. 157-159.* 1956). According to the photographs, the specimens described by Daston are at least somewhat similar in their branches to specimens of *Opuntia pulchella* appearing on herbarium sheets of older collections (e. g. the following in the Pomona College Herbarium: NEVADA. Reno, *Hillman, Pom. 83256. UTAH.* Willow Spring Pass, *Marcus E. Jones,* June 5, 1891. *ARIZONA.* Willow Spring, *Marcus E. Jones,* June 5, 1891). The specimens are strikingly similar also to living plants collected recently by Hester, Hutchison, and Rush. All plants in the *Opuntia pulchella* complex have similar large tuberous underground stems; these bear dense masses of long glochids at first, but the glochids tend to be deciduous in age as the stem diameter increases. Ultimately the stem surface may become bare as in the plants photographed by Daston. The spines vary in length from about ⅛ inch in some mature plants to over two inches in others, in width from almost cobbwebby fineness to 1/16 of an inch, in flatness from nearly cylindroidal to broadly flattened, in color from white to gray or brown, and in direction from porrect to reflexed. A full evaluation of *Micropuntia* can not be made for at least the present for lack of a type specimen for any of the three species or for the genus. Dr. Julian A. Steyermark, Curator of Phanerogamic Botany at the Chicago Natural History Museum, has written (letter of December 4, 1956) that the specimens are not in the herbarium and that there is no record of their accession. It is to be hoped that somewhere they have been merely misplaced and that they will come to light later on. Professor B. C. Tharp has written (letter of December 12, 1956) that the isotypes reported to have been



Above, Opuntia pulchella Engelm., the extreme large form clearly of the series *Clavatae* (*Opuntia,* subgenus *Cylindropuntia,* the chollas); plant from Walker River, Nevada (the type locality). *Below,* one of the forms of the species complex with short spines and with branches about the diameter of a lead pencil; from near Tonopah, Nevada. Photographs by Homer G. Rush from collections by *Homer G. Rush and Ethel Rush* in 1956; *Herbarium of Pomona College.*



Opuntia pulchella Engelm., the extreme form appearing in the upper photograph of Fig. 1. Plant at the *left* from Carson Sink, Nevada (*L. Benson 15,702*, Herbarium of Pomona College.) The massive underground storage stem is covered by areoles bearing short white felt and elongate glochids. The detached joint *above* is from the same plant. In each areole it bears one very broad white spine differing markedly from the others, which vary from brown to gray or pink. Only the two joints shown at the right on the main section of the plant approach this one in spine characters. The plant at the *right* is a portion of the individual (Walker River, Nevada, *Homer G. Rush and Ethel Rush*) in the upper photograph of Fig. 1. The glochids are falling away leaving some areoles with only the white felt; some complete areoles have fallen with the exfoliation of the other tissues of the underground stem. The portion of the same individual growing in a pot is now bare of areoles in one section corresponding to the underground portions of the plants illustrated by Daston (e. g. Cactus and Succulent Journal 28(6): 194-195. 1956) and described as three species of *Micropuntia*. Daston's figure 158 shows structures which appear to be masses of glochids fallen with the areoles.

deposited at the University of Texas are not in the herbarium.

The accompanying photographs by Homer G. Rush serve to illustrate the appearance of two extremes of the species complex. Other illustrations of *Opuntia pulchella* were published in the Cactus and Succulent Journal (28: 82-83. *f. 53-54.* 1956) by Wiegand who indicates extensive field studies. His figure 53 appears to represent the extreme long-spined form of *Opuntia pulchella* most nearly approaching the other *Clavatae*. This is the most commonly collected form of the species, and it is represented in various herbaria. For example there are seven collections in the Herbarium of Pomona College and three in the Engelmann Collection at the Missouri Botanical Garden (*S. Watson* in 1868; *H. Engelmann* in 1859; *Wheeler Expedition* in 1871). Figure 54 appears to represent a form transitional to the shorter-spined types.

QUESTIONS and ANSWERS

Conducted by
HARRY JOHNSON
Paramount, Calif.

Question: Would you be so kind as to furnish some information on that "crazy, mixed-up" *Opuntia subulata?* My plant is three years old, five feet tall and of equal diameter and has had many blooms this year of a deep rose color. I have examined two of the flowers by splitting the stem longitudinally and find the ovary contains an apparently useless organ similar to a second style growing from the bottom of the capsule with "stigmas" free among the embryonic seeds. The seeds are attached to the wall of the capsule in a normal manner. My books give no record of this type of construction. Is this an evolutionary hangover or does it perform a useful function? Is it peculiar to *O. subulata* or is it a family trait of little botanical significance?

Furthermore, I find that bunches of leaves are now appearing at some of the areoles at the extreme lip of the cup from which the faded flowers have fallen. This leads me to believe that the flowering branches are "true" branches which will persist possibly for years. Thus the seeds will be imprisoned in a living and growing part of the plant with no chance of performing their normal function of reproduction.

ALBERT PARLETT JR., Calif.

Answer: Opuntia subulata displays some rather primitive characters in the large persistent leaves and the small number of glochids. In the past is has been classified as a *Pereskia* though this of course was due to a lack of understanding of the characters of that genus. The stigma-like organ you observed in the ovary was most likely simply a proliferation of the parietal or carpellary tissue with no particular significance that I know of. As you observed, the Cactaceae have a unilocular gynoecium with parietal placentation, the fruit a berry, the flesh derived from the funicles. Since the fruit of most cacti bear scales and often hairs and spines it is obvious that more than just the ovary is involved. In the Opuntias this is very noticeable. Actually the ovary is invaginated in stem tissue from which the scales etc., originate. You observed the bunches of leaves near the top of the fruit. True stems can originate from these areoles, or in some Opuntias, flower buds can also be derived. *Opuntia fulgida* may have a dozen fruits hanging in a chain and yearly producing others. Nurserymen have grown literally hundreds of thousands of tiny Opuntias by simply planting the green fruits of some species as *O. rufida,* etc. A new species of *Opuntia* I found in Peru which will be described shortly as *O. johnsonii* bears the perianth at the tip of the branches, the ovary being completely sunk in the stem. This may be a primitive character, at any rate it is a novel one. Many Opuntias in nature probably seldom have to rely on seeds for reproduction as vegetative reproduction is probably sufficient. Thus all the plants in an area could be a clone. This was pointed up dramatically in *Opuntia munzii* which has a very limited distribution. Actually the plant is a sterile hybrid between *O. bigelovii* and probably *O. acanthocarpa.* Its only method of distribution could be by vegetative means.

Question: What is the reason for some plants not opening their flowers until late afternoon even when in sun for several hours: *Notocactus pampeanus* and *Gymnocalycium fliescherianum.* Does *Mammillaria pyrrhocephala* normally dislike full sun? Mine has burned on the crown this year. It gets up to 100 degrees and higher but plants are outside in full air. *M. zeilmanniana* blisters in the sun. It is brightest and healthiest when kept in bright light without sun but does not bloom.

AGNES T. HIRSHINGER, N.Y.

Answer: Some cacti open fullest in the afternoon including the two you mention. This is when the stigmas are receptive and the pollen ripe. However they normally open about 2 p.m. not 4 or 5 p.m. *Mammillaria pyrrhocephala* is out in full sun at the nursery and does not burn even at 100 degrees plus. Your plant may have been growing fast during moist, cloudy weather and then suddenly have experienced a hot sunny day. *M. zeilmanniana* or Rose Pincushion does best shaded from the noonday sun. Your plant apparently is not getting enough light or it would be flowering. Even tiny plants will flower. When it is making the shiny, bright growth you describe it is growing too fast and soft to flower well. Either cut down on the water or give it morning and late afternoon sun to mature the growth.

PENNSYLVANIA MEMBERS

Mrs. Mary O'Connor, 836 Country Club Dr., Pittsburgh, Pa., would like to contact other members near her.

SPOTLIGHT ON ROUND ROBINS

To begin the New Year right we start off with the formation of the Hardy Cactus Robin No. 1 which was reported to be of interest to quite a few members. It was assembled by one of our enthusiastic members Mr. Roy Vail, of Richmond, Indiana. Unfortunately he himself can not participate in it, finding his studies at college take all his time. This Robin has a longer list of members than is the usual case, and if more of you hardy cactus fans are interested to join this group two

Robins will be formed. I should like to hear from you. The Robin lacks a director at this time but it is hoped that some one of the group will take over. The list of members includes the following: Mrs. Linda Hapke, Illinois; Mrs. Nancy A. Duck, Colorado; Mrs. Ethel B. Karr, Colorado; Mrs. Edith Bestard, Arkansas; Mr. John Daily, Indiana; Mrs. H. L. Huch, Illinois; Mrs. Ella Nipper, Illinois; Mr. C. L. Chance, Texas; Miss Shirley Schrade, Ohio.

The Decorator's Robin is still seeking more members. Mrs. Ralph Campbell of Akron, Colorado, who recently asked to join it, spoke of the enjoyment she has had from the two other Robins she belongs to and looks forward to this new one.

Mrs. Campbell also asked for a Mammillaria Robin saying they were her favorites. Almost every collector has some of these cacti among his plants, and everyone speaks so highly of the beauty of form, spine variation, and the number of flowers, though often small in size, produced in quantity, it does seem that such a Robin would be worthwhile. If enough people are interested one can be formed. Do let me know.

Cactus and Succulent R. Robin No. 8, the Northeastern Robin could add one more member.

Mr. Roy Strange of Basingstoke, England has joined the Small Cacti and Mimicry Succulents Robin. Several more members would be most welcome in this fine Robin.

In the news from the Robins this time is a little note in C. & S. Robin No. 1 which Mary Anderson wrote which may be of value. "I am so glad to have a start with more of the hardy varieties of cactus for the rock garden has only the large plant of Opuntia compressa. It was a beautiful sight to see those lovely yellow cups. I did have courage to weed the prickly thing, and I heard from Linda Hapke that the way to rid your hands of glochids was to 'wash' the hands with dry sand. It works very well, and I shall pass on that remedy to my complaining friends."

From the International Robin No. 1, Joyce Hilmer from New Zealand writes, "If you once have success with Echeverias, I think you will wonder how you ever were without them. You should be able to have a grand collection of them as there are many more varieties in the U. S. and England than we get out here. I don't think we have had many new varieties for years except 'Doris Taylor' which flowers very early in the season. At present E. pilosa and pulvinata are in flower, both lovely plants. I have about a dozen varieties including setosa and leucotricha. I have not been able to catch up on gibbiflora var. carunculata yet. I was reading an article by H. M. Butterfield recently and he mentions gibbiflora var. 'Edna Spencer' which I take is similar to carunculata. I have several of the giant varieties including crenulata which is a lovely plant when well grown. Another member, Roy Strange, says in his letter from England, "Out of my 68 different varieties of Opuntia, the best is O. rafinesquei. It has blooms some 3 in. across almost every year. Color, pale yellow shading to orange in the center. The snag is, it's a low growing, spreading type and soon gets out of bounds. I experimented with a spare plant last year in a cold greenhouse where the temperature was similar to that of the outside, kept dry, it survived even though one morning I thought all would be up, it was sparkling white all over with frost. I also had a Graptopetalum amethystimum accidently left in the cold greenhouse along with a few other plants. To my surprise it survived. I like chancing a few spare plants. It gives one a little more knowledge." Our city dweller, Agnes Hirshinger, writes, "I have had very good luck with three of the Gymnos (mihanovichii, Pink Chin (fleischerianum), damsii, still budding and the same for Astrophytum asterias which is showing its third bud this season. I have had to bring the plants in off the outside sills, and have them on the inside sills with the windows open partially, at least, every day and just a crack at night even when it is very cold. Have done the last 'soaking' watering of the season, as of yesterday, and will water very lightly next weekend and then rely on spraying through to the really cold winter. Two Conophytums are in bloom now too, C. giftbergensis and C. multipunctatum. The former lavender, very tiny, and stays open a week. The latter pale yellow, brush-like, also lasting a week." With her success in handling her plants she says, "I might be in danger of thinking I had this cactus-business licked! But the older one grows the less one is sure one knows!" From the challenge of growing cacti she finds it is something more, that it is, to quote a line she read, 'the fierce joy of nurture, which is akin, if not identical with, the joy of creation,' which, as she said, "is expressing the creative instinct in all of us."

MRS. GLADYS H. PANIS

Notes on Haworthias

By J. R. BROWN

Haworthia coarctata var. **krausii** Resende in Mem. Soc. Brot. II (1943) 84, fig. 33 a, d. Resende and Pinto-Lopes in Port. Acta Biol. (B) II (1946) 189 figs. 20, 23.

Plant with a leafy stem 15 cm. or more in length, 5-6 cm. in diam., decumbent in age, proliferous from or near the vase.

Leaves 3.5-4cm. long, to 2 cm. broad, green, back of leaves with numerous greenish-white tubercles arranged in more or less transverse rows.

Locality: unknown.

Named in honor of Dr. Krause of the Botanical Institute of Breslau.

Over a long period of years several Haworthias have been received from So. Africa which seemed to be forms of *Haw. coarctata,* varying in the size and shape of leaves and the more distinct tuberculation on the back of leaves. The present form var. *krausii* Resende illustrates this variation quite well. This plant was observed by Resende in the Botanic Garden at Breslau, and many years ago I received a Haworthia from So. Africa, without locality, under the name *Haw. coarctata* var. which seems to be quite similar. The plant shown in the illustration of var. *krausii* was sent to me by Dr. Resende of Lisbon several years ago. The leaves are shorter and broader, the tubercles more numerous and more prominent than in the *type.*

This Haworthia should not be confused with the old horticultural form *Haw. krausii* Hort., which is a form belonging, most probably, in the sect. *Tortuosae.*

FIG. 19. *Haworthia coarctata* var. *krausii* Resende nat. size

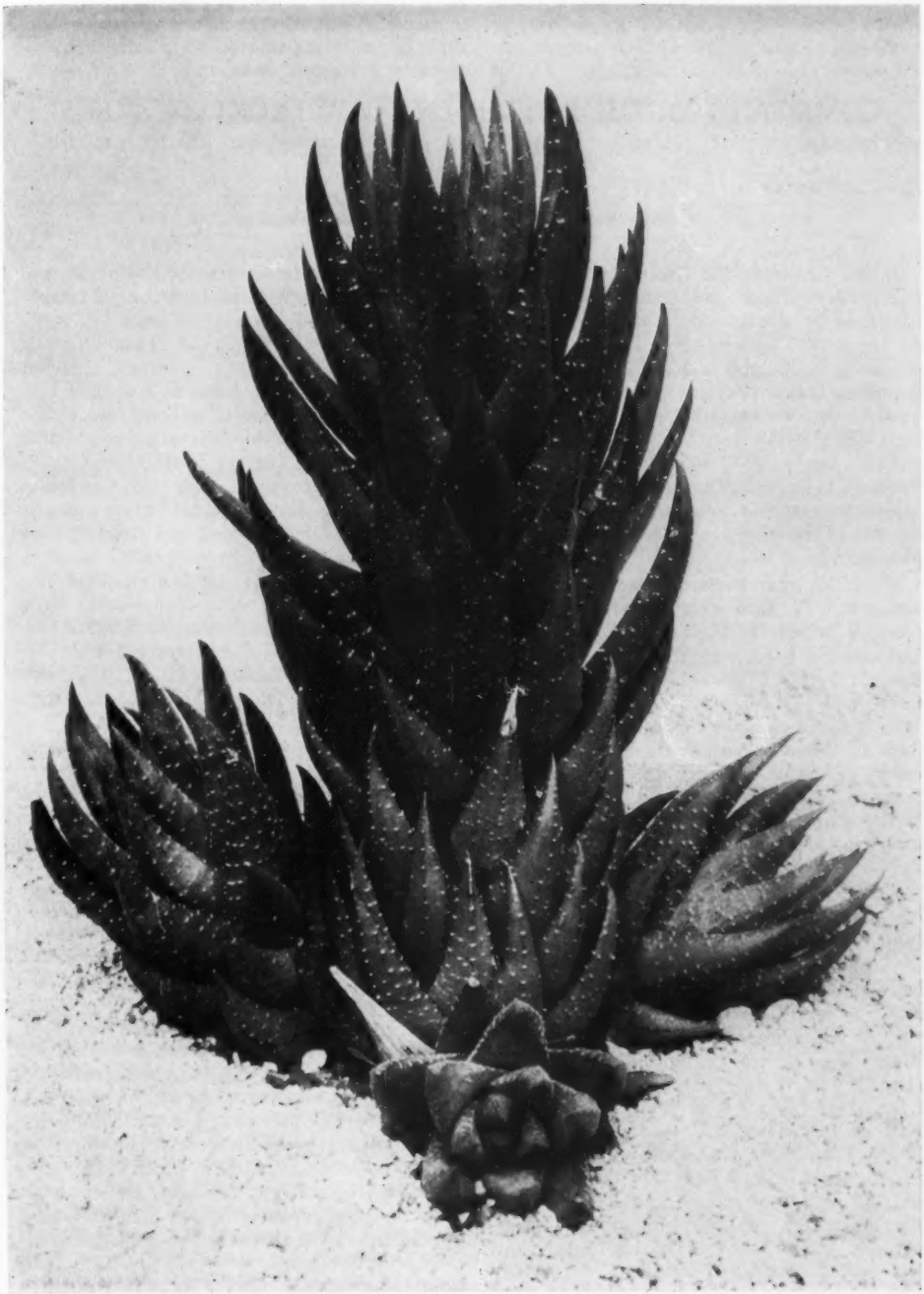


FIG. 20. *Haworthia coarctata* Haw. nat. size

COMMENTS ON THE PHYLOGENY OF WERCKLEOCEREUS AND ITS ALLIES*

By MYRON KIMNACH AND P. C. HUTCHISON

In the *Cactaceae,* the Britton and Rose subtribes *Epiphyllanae* and *Hylocereanae* of the tribe *Cereeae* have been distinguished, primarily, on vegetative characters, for although the descriptions mention other characteristics, these are not mutually exclusive, and, consequently, do not separate the two taxa. Nevertheless both have been widely accepted in their original sense until recently. Buxbaum(3) has provided the first attempt to organize the included taxa in a more natural way and is proposing(4) a new subdivision of the tribe to accord with his views on phylogeny.

Werckleocereus Britt. & Rose and *Weberocereus* Britt. & Rose were placed in the *Hylocereanae* because of their several-angled stems and vine-like habit, and *Eccremocactus* Britt. & Rose, in the *Epiphyllanae* because of its flattened stems and non-climbing habit, although the authors noted that the flowers were similar to those of *Weberocereus.* We believe these three genera to be closely related and of common ancestry in the *Hylocereanae,* and, that differences of the stems and of habit are inadequate for separating these subtribes.

The *Hylocereanae* are defined by Britton and Rose(1) as "Elongated, vine-like, climbing, trailing or pendent, branched cacti, the stems angled, ribbed, fluted, or rarely flat, the joints emitting aerial roots, the areoles usually spiny; flowers mostly large and white, rarely red or pink; perianth-limb regular, or in *Aporocactus* more or less oblique; fruit a fleshy berry, often large." Nine genera were included: *Hylocereus* (Berg.) Britt. & Rose, *Wilmattea* Britt. & Rose, *Selenicereus* (Berg.) Britt. & Rose, *Mediocactus* Britt. & Rose, *Deamia* Britt. & Rose, *Weberocereus, Werckleocereus, Aporocactus* Lem. and *Strophocactus* Britt. & Rose. The last mentioned and the recently described genus *Cryptocereus* Alexander were, until the publication of *Werckleocereus imitans* Kimn. & Hutchis.(5), the only taxa with flattened stems assigned to this subtribe. The first two seem more closely allied to *Selenicereus* than to any other genus.

The *Epiphyllanae* are described by Britton and Rose(2) as "Mostly epiphytic and night-blooming cacti, generally growing on trees, but sometimes on earth when this is rich in humus, rarely in crevices or rocks, much branched, spineless (except *Eccremocactus* and some species of *Epiphyllanthus*); joints several or many, usually flat except at base, often thin, with the areoles borne along the margin (except in *Epiphyllanthus*); flowers regular (except in *Zygocactus* and *Epiphyllanthus*); perianth various; filaments usually long and slender; style long and slender; fruit spineless, usually red or purple, either naked or bearing a few scales (rarely many), these usually with naked axils; seeds small, black." Nine genera were included: *Zygocactus* Schum., *Epiphyllanthus* Berg., *Schlumbergera* Lem., *Epiphyllum* Haw., *Disocactus* Lindl., *Chiapasia* Britt. & Rose, *Eccremocactus, Nopalxochia* Britt. & Rose and *Wittia* Schum.

Two comments can be made with regard to these two descriptions. First, the characters described and the detail given are mostly irrelevant in that genera of entirely different affinity can be fitted into these subtribes on the basis of the circumscription given. Second, this is well illustrated by the fact that by omitting the references in these descriptions to specific genera, the descriptions could be substituted for one another and would almost equally well apply. In other words the descriptions do not sufficiently differentiate the two subtribes.

We believe that both subtribes, as delimited by the genera included by Britton and Rose, are polyphyletic. Buxbaum(3) has pointed out that *Aporocactus* is best associated with *Nyctocereus* and its allies; *Nopalxochia, Chiapasia, Disocactus* and *Wittia* probably are evolved from the *Hylocereanae* but cannot be included in that subtribe; *Zygocactus, Epiphyllanthus* and *Schlumbergera,* again, probably belong near *Rhipsalis. Epiphyllum* is left as the only representative of the *Epiphyllanae,* but we do not feel that Buxbaum is correct in proposing its derivation from *Nopalxochia,* a theory he has since abandoned (oral communication). The origin of *Epiphyllum* is not clear, but it is probably not from this line.

*University of California Botanical Garden, Berkeley, Contribution Number 141.

We are concerned here, primarily, with *Weberocereus, Werckleocereus* and *Eccremocactus.* Buxbaum's(4) proposed line begins with *Werckleocereus* and leads through *Weberocereus, Eccremocactus, Nopalxochia, Chiapasia* and *Disocactus* to *Wittia.* We are inclined to agree that at least the first four genera are closely related, and, probably, are of common ancestry, and we suggest that the first three are so close to one another that they might best be considered to be a single genus. *Werckleocereus imitans,* the only presently-known flat-stemmed species of the genus, provides an additional link between these genera, as is shown in the following tabulation.

	WERCKLEOCEREUS		WEBEROCEREUS	ECCREMOCACTUS
	W. tonduzii & *W. glaber*	*W. imitans*	all species	*E. bradei*
STEMS	3-angled, shallowly crenate, spiny	flat, deeply lobed; spines rare	3- to 6-angled, nearly entire; spines many to nearly absent	flat, shallowly crenate; spines present or absent
FLOWERS	7 to 10 cm. long	7 cm. long	4 to 7 cm. long	6 cm. long
PERICARPEL	podaria many, hardly decurrent; areoles with stiff spines	podaria many, hardly decurrent; areoles with stiff spines	podaria many, hardly decurrent; areoles spineless but with long hairs	podaria few, conspicuously decurrent; areoles spineless, the lowest sometimes with few short hairs
Remainder of RECEPTACLE	spines from all areoles; podaria many, their bases shortly decurrent and low	spines only from lower areoles; podaria few, bases long-decurrent and low	spineless, with long hairs present on most areoles or confined to lower ones; podaria many, bases shortly decurrent and high	spines and hairs absent; podaria few, bases long-decurrent and high
INNER PERIANTH SEGMENTS	oblong to oblanceolate	ovate-lanceolate	ovate-lanceolate	oblong
FRUIT	globular, yellow, podaria many; spines (in *W. tonduzii*) *ca.* 50 to an areole	oblong, red; podaria many; spines 40 to 60 to an areole	shortly oblong, red or pink; podaria in *W. tunilla* few, with *ca.* 4 spines and 6 hairs, other spp. with more podaria, no spines and 0-6 hairs	oblong, red; podaria few, no spines, with 0-3 weak bristles on each of the lowest areoles, sometimes with a few short hairs

With our present knowledge it seems best to accept Buxbaum's proposed line for these genera (excluding *Epiphyllum*), based as it is on the criterion of loss of axial floral characters. Arranged in this order, we find that species with flattened stems have evolved from ancestors with angled stems, and that flowers become progressively less spiny and with fewer podaria. As the tabulation shows, *W. imitans* seems to be intermediate, in this progression, between *Werckleocereus* and *Weberocereus* as far as its flower is concerned. Its fruit is similar to that of *Werckleocereus,* while its stem is flattened as in *Eccremocactus.* The stem-lobing suggests *Cryptocereus anthonyanus* Alex. and *Epiphyllum anguliger* (Lem.) Don, but these two species belong to two additional and separate lines. Consequently we believe that almost identical stems have evolved in three separate lines, two of them in the *Hylocereanae* and one of them in the *Epiphyllanae.*

Regardless of one's opinion as to the appropriate generic disposition of *W. imitans,* the existence of this species further weakens the already weakly defined genera *Werckleocereus, Weberocereus* and *Eccremocactus.* Britton and Rose would undoubtedly have treated it as a new genus, as would some living authors. In placing this species in *Werckleocereus* rather than *Eccremocactus,* we have been guided, primarily, by the opinion of Buxbaum (oral communication), with which we now concur, that the number and shape of pericarpel podaria, as well as their spination, is of greater significance than the sum of such characters as stem-form, size of flower and fruit-color. Thus in *Werckleocereus glaber* (Eichlam) Britt. & Rose and *W. tonduzii* (Web.) Britt. & Rose, as well as in *W. imitans,* the pericarpel is evenly covered with small conical podaria with many stiff brown spines, whereas in the more advanced *Eccremocactus bradei,* as we have pointed out(6), the podaria are greatly modified, being few in number, and with prominent, strongly decurrent bases and a few weak bristles. The only important floral differences between *W. imitans* and its two congeners

is that in the former the spination is restricted to the lower half of the tube, while in the latter it extends to the base of the outer segments.

W. imitans was not assigned to *Weberocereus* because in all species of that genus, stiff floral spines are lacking: only long, weak hairs occur in this genus and these are inserted somewhat higher on the tube; the receptacle scales are somewhat more pronounced, and in one species, *W. tunilla* (Web.) Britt. & Rose, the number of podaria is fewer.

As in the definition of subtribes, so in the definition of genera, stem-form has been overemphasized as a critical character by Britton and Rose and others, probably because no other character was sufficiently described in the literature to make comparisons possible. The wide, flattened stems of *W. imitans* at first seem greatly divergent to the 3-angled stems of its congeners, but this difference of one rib seems less significant, because in *Epiphyllum,* although flattened stems occur on all species, many of these also produce terete or three-angled stems occasionally or frequently. Wercklé has pointed out that occasional mature stems(7, 8) and all young seedling stems(9), of some species of *Weberocereus* may be two-sided, a character we have observed, particularly, in *W. panamensis* Britt. & Rose.

Associated with the reduction of number of ribs to two, there seems to be a tendency toward widening of the stem; this can be seen elsewhere in the family as well, for example, in *Strophocactus* and *Cryptocereus* as compared to the related genus *Selenicereus.*

When present studies of this assemblage are further advanced it will probably seem best to combine *Werckleocereus, Weberocereus* and *Eccremocactus.* This alliance would then consist of closely related and geographically approximate species with short nocturnal flowers, thick, cymbiform scales and outer segments, tubercled pericarpels with hairs or spines, a well-defined although unclosed nectary chamber, and stamens in two widely separated zones, the upper forming a throat-circle.

Nopalxochia (in which we include *Lobeira* Alex.) seems to be a further progression beyond *Eccremocactus,* in which the receptacle scales and perianth, as is often the case with diurnal flowers which are derived from nocturnal ones, have become colored and greatly enlarged. It is not possible at present to be definite as to the origin of *Epiphyllum.* Buxbaum (unpubl.) now believes that it has its origin in an entirely separate line from the genera discussed here and we find his argument convincing. However, we wish to point out the rather startling, and perhaps significant similarities between *Werckleocereus imitans* and *Epiphyllum chrysocardium* Alex., the most primitive of known species of *Epiphyllum.* The stems of both are strongly lobed and the similarly shaped pericarpels of the two species are covered with small conical podaria with short, stiff bristles—primitive floral characters not occurring elsewhere in *Epiphyllum.* Florally, it is in the much elongated receptacle and the enlarged perianth of *E. chrysocardium* that the two differ greatly, and at first we believed that *Epiphyllum* could have evolved from ancestors similar to *W. imitans.* Now we are less certain, believing it unlikely that the immense flowers of *E. chrysocardium* could have been derived from a small-flowered ancestor like *W. imitans* without diverging more widely in other characters as well. In terms of present knowledge, convergence along two separate lines seems a more satisfactory explanation.

Considering the recent discovery of such phyletically significant species as *Epiphyllum chrysocardium, Werckleocereus imitans,* and *Cryptocereus anthonyanus,* it is probable that the jungles of Central America still contain undescribed species which would do much to explain the phylogeny of the epiphytic and climbing cacti.

SUMMARY

The subtribes *Hylocereanae* and *Epiphyllanae (Cactaceae,* tribe *Cereeae),* as circumscribed by Britton and Rose, are considered to be polyphyletic and inadequately diagnosed. In the former, at least *Aporocactus* is considered as not belonging with the 9 other included genera. In the latter, only *Epiphyllum* is retained in the subtribe. Of the remaining 8 genera, *Eccremocactus* is assigned to the *Hylocereanae,* close to *Werckleocereus* and *Weberocereus* and it is suggested that two of these genera might be reduced when present studies are completed. The primary distinguishing characteristics of these three taxa are compared and discussed. *Nopalxochia, Chiapasia, Disocactus* and *Wittia* are considered to have evolved from this same line. *Zygocactus, Epiphyllanthus* and *Schlumbergera* are considered not to belong in either subtribe.

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"Berkeley in '57"

THE SEVENTH BIENNIAL CONVENTION OF THE CACTUS AND SUCCULENT SOCIETY OF AMERICA, INC.

Berkeley, California, July 12-16, 1957

Newsletter No. 3—December, 1956

ART SHOW

The desire to perpetuate the beauties or peculiarities of our plants by means of photographs and paintings has led to some excellent works of art, few of which are ever seen by the majority of our members. An innovation at this convention will be an art contest with prizes given to the best entries. Categories will consist of black and white, or color, photographs, and paintings and drawings. These works will be on view to everyone, and qualified judges will scrutinize them with critical eyes. So look over your past efforts in this field and select those you think will best qualify. The range of spine formation, stem-shape and flower color to be found in our plants offers unlimited scope for anyone with a camera or paint-brush and a modicum of artistic talent; between now and next summer you should have plenty of opportunity to indulge such talent. Details as to prizes, size of prints, etc., will follow in a forthcoming newsletter.

Also on view will be a special, non-competitive exhibit of the fine botanical drawings of May Blos, some of which you have seen recently in the Journal.

SPEAKERS

Two more examples of the speakers you will hear next summer are: Dr. Norman Boke of the University of Oklahoma, and Dr. E. B. Kurtz of the University of Arizona. Both are well qualified to speak on their specialized interests, and we can look forward to some enjoyable and educational words from them.

PLANT AND BOOK DONATIONS

Plants and books to be used in the auction, or as door-prizes and gifts, are beginning to accumulate. The U. C. Botanical Garden has donated 200 species of cacti and other succulents, many of which are new introductions. A local member has contributed a huge imported specimen of *Astrophytum ornatum*, as well as a fine plant of the Creeping Devil (*Machaerocereus eruca*). Scott Haselton, not to be outdone, has donated some valuable cactus books. Others of you wishing to support future conventions can do so by contributing plants, books and associated items, as the proceeds of the auction will go to the national society's Convention Fund. Write the undersigned soon, listing what you can contribute.

MORE COLLECTIONS

Many of the fine collections which you are urged to visit this July are either specialized or general—everyone should be able to find several of interest. Following are three more examples.

In the accompanying photo we see a partial view of the garden of Thomas Juul, of 795 Foerster, San Francisco (phone DE 3-8435); planted out on the sloping hillside is a wide selection of cacti and other succulents. As is usual in local cactus gardens, South American species predominate, for in our cool foggy climate Mexican and native cacti do not grow or flower as well. In a large adjacent glasshouse can be seen the more choice or tender species. One of Mr. Juul's main interests is growing cacti from seed, and recently he has been raising many new or rare species from seed collected in South America. Here is a good opportunity for those beginners in seed raising to discuss methods with one more experienced.

Haworthia enthusiasts will be sure to visit J. W.

FIG. 21. A view of the rockery of Thomas Juul of San Francisco. Photo by Ernest Mueller

Dodson, of 921 Murchison Drive, Millbrae (phone OX 7-5975). Situated just off State Highway 101 some 16 miles south of San Francisco is this largest collection of Haworthias in California. Mr. Dodson has been accumulating these plants for many years, importing a large number from Africa. He is skilled in their cultivation and in the technique of establishing imports. His greenhouse will interest everyone; it is composed mostly of blue plastic, which precludes the use of extra shading during the summer. The shape of the house is unconventional, being nearly flat-roofed and blending in with nearby planters and trellises. It is one of the few attractive succulent greenhouses to be seen anywhere. Many of you will be able to pick up ideas for the design and construction of your own projected greenhouse. Mr. Dodson is also a well-known student of the classification of Haworthias and has written on this subject in the "Haworthia Review," which he edited for some time. Everyone finds it very difficult to name Haworthias, due to the large number of species and the scattered literature in which they were published. Those having plants which they would like identified should bring with them a fairly large rosette of each, and it is likely that Mr. Dodson can name them for you.

Carl Elser, of 4067 Whittle Ave., Oakland (phone KE 3-1443), has one of our better general collections. There is an extensive group of Epiphyllums and similar plants in a lath-house and under an unusually designed but effective lean-to. Besides an outdoor rockery with many large plants of *Espostoa, Oreocereus,* etc., are two glasshouses filled to overflowing with all sorts of specimens, especially Melocacti, Mammillarias, and Euphorbias. One of Mr. Elser's favorite plants is the very rare crested form of *Euphorbia obesa,* of which he has many large grafts. This is a much stouter and neater crest than is usual in this genus. Also to be seen are large plants and hundreds of seedlings of *E. bupleurifolia.* Most of us find this a rather difficult plant to cultivate, but Mr. Elser seems to have no trouble. He has found that only a few of the seedlings turn out to have male flowers; this seems to be another reason why the species remains rare in cultivation.

MYRON KIMNACH
Convention Committee Secretary
and Publicity Chairman
5918 Jordan Ave.
El Cerrito 9, Calif.

THE NEW YORK CACTUS AND SUCCULENT SOCIETY

The New York Cactus and Succulent Society, now well into its second year, has outgrown its infancy and is settling down to a serious and purposeful organization. The New York C & S Society was brought into being solely by the efforts of Dr. and Mrs. Gerald Barad who contacted every New Yorker whose name found its way into the pages of the Journal—others were referred to them by Scott Haselton and Howard Gates. The first meeting attracted a handful of interested persons and subsequent meetings brought out a larger and larger attendance until they reached frightening proportions—frightening, that is, for New York apartments. Monthly meetings were decided upon—to be held at the homes of members so that all would have the chance to display their own collections. In the beginning, no serious attempt at programming was made—each host discussed his own collection and this was usually followed by a question and answer period with some discussion on our mutual problems. Since we are fortunate to count among our members Ed Alexander and Tom MacDougall, there are very few questions brought up at a meeting that go unanswered.

Color slides play an important role in our meetings—Ed Alexander seems to have an inexhaustible supply of excellent slides and he is aided and abetted by Jerry Barad in this field so that our slide showings are greeted with a great deal of enthusiasm. Many of our members are long distance travellers and so we have been treated to travelogues that range all the way from Mexico to Alaska—with special emphasis on the flora encountered en route.

Now that most of the members have been able to display and discuss their own collections the need for a definite program has been clearly recognized so that at the close of each meeting a topic is selected for the next meeting and it is the duty of the host for that meeting to do his best with it. In this way every member becomes an active member and does his or her share toward keeping the society alive and flourishing. The ladies of the New York C & S Society come in for their own share of praise for the graciousness of their hospitality, and the social period—with collations—is not the least part of our meetings! It was suggested by a member with an eye on an ever-increasing waistline, that the ladies might provide a little less abundance on their tables!

One of the high spots of our year was the visit paid to us by Scott Haselton in July. A special meeting was called on 24 hours' notice—just three days after a regular meeting—when it was learned that Mr. Haselton would be passing through New York on his way to a New England vacation. A goodly crowd gathered to meet him and his son Stephen at the home of the Barads. A lively lawn party was enjoyed by all, after which we retired to the Barad's living room where Mr. Haselton regaled us with a summary of his experience as editor and publisher of the Journal. His enthusiasm and humor endeared him to all of us and we all hope that he will be able to repeat his visit in the near future.

And now for some wonderful last minute news for all cactus and succulent lovers in the New York area. We have just learned that the New York Botanical Garden has at least realized that there is a continuing interest in xerophytic plants as evidenced by sales of potted seedlings and Ed Alexander's book in the Garden shops and have decided to rehabilitate the cactus house. Best of all, is that Ed is in charge of the task and has been given a free hand! All of us who recall the past glories of the Cactus House will hardly be able to wait for the re-opening.

Cactophiles in the New York area who wish to join our Society should contact Bea Barad, 218 Beaumont Street, Brooklyn, New York.

JOSEPH EMMA

TWO NEW SPECIES

The September issue of "Cactaceas y Suculentas Mexicanas" described a new species of *Graptopetalum* in honor of Mr. Dudley B. Gold who discovered the plant; it is called *Graptopetalum goldi* Matuda. In the same issue Dr. Helia Bravo H. described a new *Mammillaria* which she named *Mammillaria mitlensis* from Mitla, Oaxaca; the species is near *M. solisii* but differs in having outside perianth segments entire, white filaments, green stigma lobes and greenish purple fruit. It flowers in April and May.

SPINE CHATS

LADISLAUS CUTAK

They say things are done in a big way in Texas and I certainly can attest to this fact. In Octo er I was invited to open the garden club season in Fort Worth and from there I went to San Antonio to fulfill a like engagement. The Fort Worth Garden Club is the biggest garden club in that city with a membership of more than 400 members. The meetings are held in the Fort Worth Garden Center in Trinity Park. The horticultural building is a structure of rough-hewn slabs of Palo Pinto stone and consists of office, library, kitchen and reception rooms where the meetings are held. The auditorium was packed with members for this first meeting to hear my talk on "Cacti and Succulents for the Home." The audience seemed to enjoy the discourse and were often amazed at some of the flowering rarities which I showed. The talk centered around cacti, specifically as house ornaments in fancy containers, dish gardens, terrariums and in floral arrangements. Mrs. A. Renerick Clark, program chairman, took me on a deluxe tour of some of the outstanding gardens in the city. Her own garden featured a rocky slope given over to *Hesperaloe parviflora,*—a delightful native desert lily, allied to the Yucca, with exciting pink inflorescences.

The Botanic Gardens in Trinity Park are under the supervision of Mr. Lawrence McLean, the city forester and horticulturist. There is a small display greenhouse attached to the Garden Center where cacti and succulents are much in evidence, but there is a much larger cactus garden operated outdoors where larger specimens are being grown. The conspicuous cacti were Saguaros and Bisnagas with a sprinkling of Hedgehogs, Pincushions and Prickly Pears. The beautiful Retama *Parkinsonia aculeata,* waved its yellow-flowered branches in the breeze. The city of Fort Worth is lucky to have an energetic Larry McLean for its horticulturist. He uses native trees and shrubs, like *Yucca treculeana* and *Leucophyllum frutescens,* in avenue plantings and ornamental beds.

While in Fort Worth I had a delightful visit with Mr. and Mrs. Richard Schweers, one of our charming cactus couples whom many of you will remember from the Phoenix convention. Dick and Faye recently returned from a picture-taking trip to Mexico. He is a geologist with one of the Texas oil companies but loves plants intensely, particularly the cacti and succulents. Has lots of success with them. The outdoor garden slopes from the house in the back to a ravine.

Through the generosity of Mrs. A. R. Clark, who loaned me her Cadillac, I was able to drive to Weatherford, Texas, and see the famous Chandor Gardens. Douglas Chandor died in 1953 and was considered one of the most famous portarit painters of his time. His noted canvas portraits include those of Winston Churchill, President Franklin Roosevelt and Queen Elizabeth II to name a few. He loved flowers and plants. Back in 1936 he began making plans for an enchanting garden in Weatherford. To begin with, the ground was caliche, hard as concrete. With dynamite he blasted holes, hauled in soil, and transplanted trees. For sixteen years he worked at his garden and almost realized his dream when death suddenly overtook him. His widow, Ina Chandor, is now trying to complete the garden according to her husband's original plans. The gardens, really a series of outdoor rooms, are done in Oriental style with many Chinese figurines in niches and on pedestals. There is a large oval pool with Ming dragons spurting patterns of water 20 feet in the air and high overhead wires spread like a spider web upon which Wistaria branches are trained to form a canopy as a shield against the scorching sun. The garden is at its loveliest in late March and April when thousands of azaleas are in bloom. I spent a half day with Ina Chandor and enjoyed every minute of my stay, breaking away reluctantly only because not to miss my plane for San Antonio.

Joe and Cia Kres met me at the airport and whisked me to Menger Hotel, located across the street from the historic Alamo, where I parked my bag and shortly after was taken to Witte Museum in Brackenridge Park to meet the members of the Cactus and Succulent Society of San Antonio. This is a fairly new club organized by the Kreses in May, 1955. Both Joe and Cia came from big cities in the East and spending most of their lives in apartment houses and on cement sidewalks never got acquainted with plants of any kind until they moved to San Antonio in 1952. One day while going through a 5 and 10 store they spotted a "rubber plant" *(Crassula argentea)* and bought it. Shortly after a few more succulents were acquired in the same manner. A Johnson cactus catalog fell into their hands and from it they learned about the national society which they promptly joined. Curiostity led them to read books on cacti and learn their fascinating secrets. Field trips netted native cacti and the 'cactus bug' bit them hard. The next move was to seek out local cactophiles and organize a local chapter. Ellen Quillin, director of the Witte Museum and author of "Texas Cacti" and "Cactus Culture," was most helpful and offered her office as a place to call the first meeting. The San Antonio club is an enthusiastic one and next April will participate in the big Spring Show of the Garden Center. The Kreses live in a trailer camp and have an interesting collection. Joe has a preference for stapelias, lithops and mammillarias and Cia likes euphorbias and columnar Cerei.

My talk in San Antonio was sponsored by the Live Oak Garden Club, a grand bunch of garden-minded citizens headed by Mrs. Richard H. Friedrich. This charming lady and her husband made possible the lovely cactus garden on the campus of Trinity University. The garden setting is in a portion of an abandoned stone quarry and is destined to become one of the show spots of San Antonio. I am told many of the large plants came direct from the Friedrich farm. The selection includes fat Saguaros, squat Hedgehogs, wicked Chollas, bushy Prickly Pears, plump Barrel Cacti and miscellaneous xerophytes. If any of you find yourselves in San Antonio, don't fail to look this garden up.

San Antonio is a charming town. I particularly enjoyed the walkway edging the winding San Antonio River through the downtown section. It is beautifully landscaped with artistic stairways leading down to the river and rustic benches provided along the walk. I also enjoyed the Alamo, the "shrine of Texas liberty,"

where in 1836 less than 200 defenders laid down their lives that Texas might be free. Another beauty spot was found in Brackenridge Park. A steep winding road leads to the top of an abandoned rock quarry where magnificent views of an Oriental garden are to be had. At the bottom are several pools planted with water-lilies and the winding rock walks over the lily pools are planted with flowers of every hue massed in kaleidoscopic pattern. Hope I can return to Texas again and see more of its famous spots and chat with interesting people like those met on this trip.

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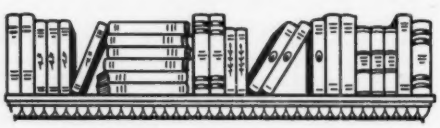

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CACTUS AND SUCCULENT EXHIBIT

The Los Angeles Cactus and Succulent Society is staging an exhibit of their plants at the Fremont High School, 425 E. 79 St. in Los Angeles on the afternoon of Sunday, February 3. Everyone is welcome, so come on over and give this group encouragement.

WALDO ABERCROMBIE, Mgr.